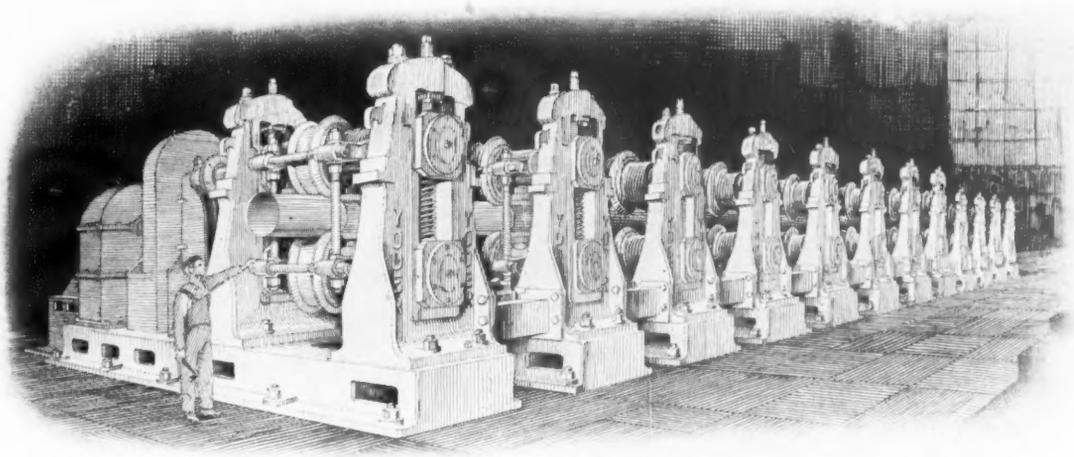
AUG 21 1930

IRON TRADE REVIEW
STEEL



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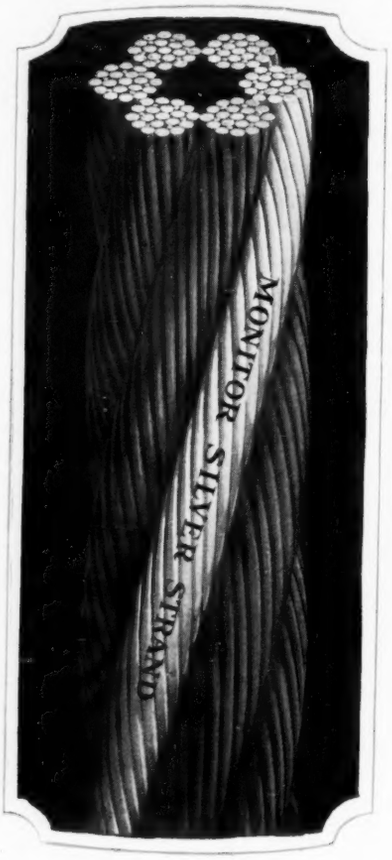

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Vol. 87, No. 8, August 21, 1930, issue of STEEL, published weekly at Cleveland, O. Entered as second class matter at the post office, Cleveland, O., under the act of March 3, 1879. Subscription $6 a year in U. S. and Canada; foreign £2:0:0; single copies 25c.

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IRON TRADE REVIEW
STEEL
Published Every Thursday by
PENTON PUBLISHING CO.
PENTON BUILDING, 1213 WEST THIRD ST., CLEVELAND, O.
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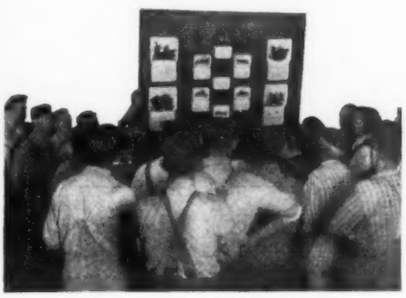

How Lost-Time Accidents Were Reduced in Forging Plant. Page 46

THIS WEEK:

BEGINNING with this issue, page 43, STEEL *presents a series of several articles dealing with development of vanadium steel and its uses in the United States. This is an important contribution to literature pertaining to alloy steels, by N. Petinot, assistant to the president, Alloy Steel Corp. of America. It was originally presented at the sixth International Congress of Mining, Metallurgy and Applied Geology, Liege, Belgium, June* 22-28. *Properties and applications of vanadium steels are described in a thorough manner.*

STEEL is published by the Penton Publishing Co., Cleveland, O. Member, Audit Bureau of Circulations; Associated Business Papers Inc., and National Publishers Association

BRANCH OFFICES:

New York	220 Broadway
Chicago	Peoples Gas building
Pittsburgh	Oliver building
San Francisco	Claus Spreckels building
Washington	National Press building
Cincinnati	Bell block
London	Caxton House, Westminster, S.W.1.
Paris	9 Rue de Londres
Berlin	Dahlmerstrasse 64 A. Lichterfeld-West

Subscription in the United States, Canada, Cuba and Mexico $6 per year; in Great Britain and European countries £2.0.0.

Entered as second class matter at Post Office at Cleveland under the Act of March 3, 1879.

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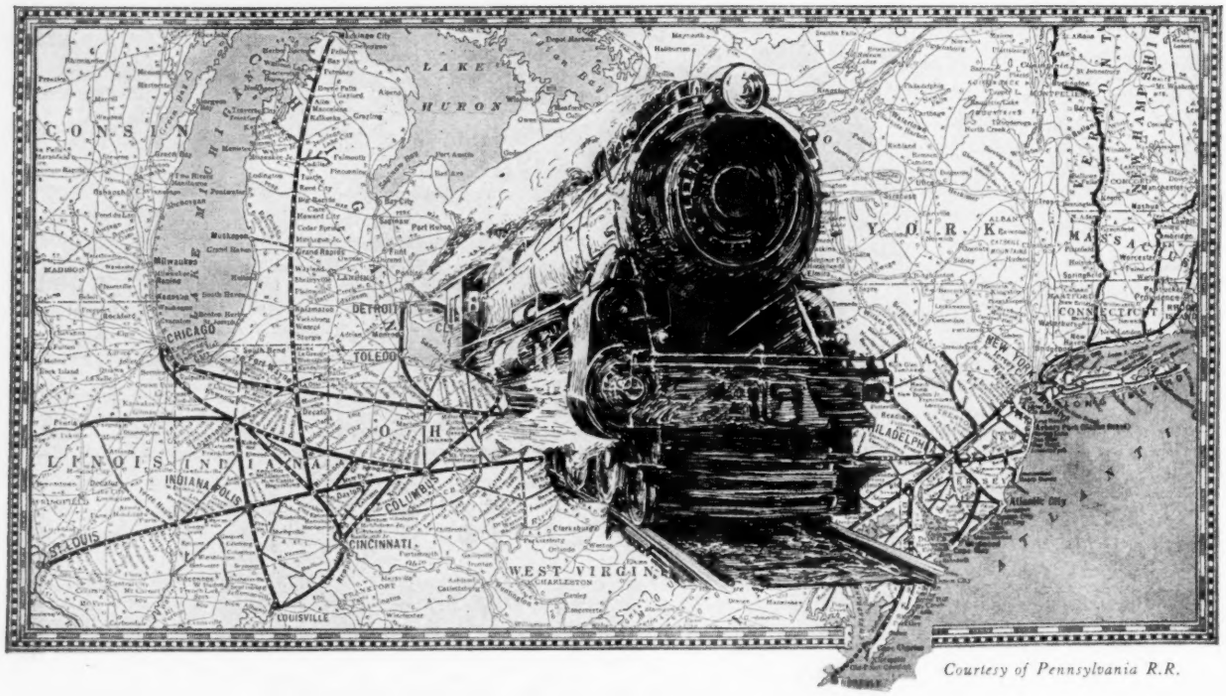

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STEEL-SERVICE

Volume 87 Number 8

IRON TRADE REVIEW
STEEL

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

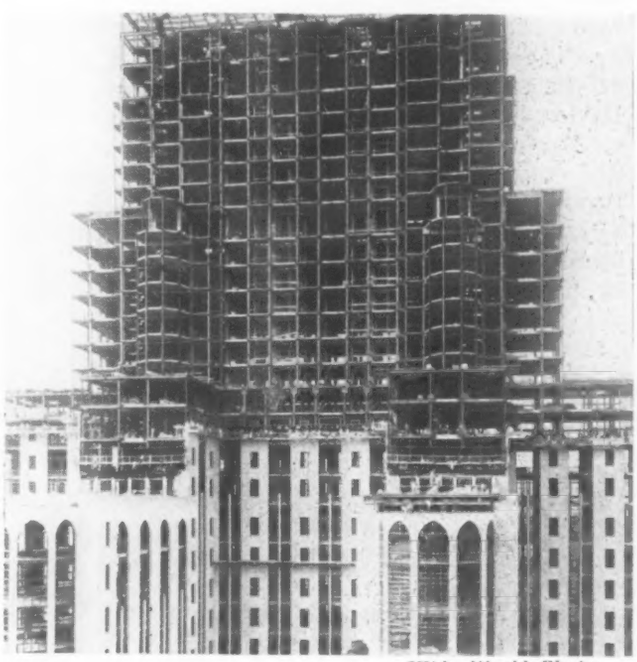
STEELMAKERS can no longer depend on 30 to 35 per cent gains in population every ten years to accelerate demand. They must be content with increases of 15 to 16 per cent, or less. All the exhortations by great men of the past and present for larger families have failed to change the economic tide, while immigrant quota laws have served as an additional check. Census comparisons (Page 23) reveal the largest of all numerical gains in population—big, because we are a big nation—but next to the smallest of percentage increases. Extraordinary strides in steel production as noted in the past probably never will again come through original and primary demands such as caused them. The nation now is entering an era of intelligent, as distinguished from numerical, growth. All the arts of specialization are extending usages of steel, serving to add to per capita consumption. Steel demand has not, like is said of the youth, "attained its growth." Here it is bulging out at the elbows with transcontinental pipe lines taking more than a half million tons, keeping mills busy to the end of the year, and projects underway and planned to cost over a quarter billion dollars (Page 26).... The nation is consuming gasoline at the rate of 1,000,000 barrels a day. River barges are supplementing pipe lines for distribution (Page 33). . . . All-steel floating service stations are appearing along the Atlantic coast (Page 27).

Instalment Buying a Steadying Influence

While business still lingers in the twilight (Page 37) . . . it is indeed fortunate that there has been no breakdown of our established custom of instalment selling, as such would decrease consumption 50 per cent. Ninety-four out of a hundred of all instalment purchases are paid for with but little collection effort, in the experience of one who knows (Page 35.) Instalment selling, like death and taxes, has been and always will be with us. We have merely controlled and extended a beneficent force, which is self-imposed discipline and responsibility, usually for a good purpose. Now, if we could show similar progress in extending our world trade. . . . We lead in black and galvanized sheet production but Britain, that must buy billets and bars outside her borders, runs away with half of the world's export business. (Page 99). . . . Though the controversy goes on regarding the admittance of soviet manganese ore our imports, mainly from that source, for the first six months of 1930 increase to the highest point on record, excepting 1926 (Page 33).

Moderation the Antidote for Communism

Russia eventually will make good; whether under the present form of government is a ques-



Wide World Photo

Steel in magnificent co-operation with medical science: Main hospital unit of New York Hospital—Cornell Medical College association's building group in New York, the world's largest unified project for medical education, research and care of sick. Central buildings occupy three square blocks.

tion. In the meantime all the misguided zealots of communism in foreign lands are seizing the chance presented by world-wide depression. Under a system of equal opportunity able men build great fortunes; contrast then fans the fire. If we are to remain conservative we must practice moderation (Page 34). . . . Men pass on but industry, perpetual as life itself, must be served. The Bethlehem-Sheet & Tube merger trial is resumed. Bethlehem attorneys get into the record details of how Cyrus S. Eaton merged companies into the Republic Steel Corp. (Page 25). . . . The current iron and steel markets present a drab picture, with larger structural requirements the only redeeming feature. Only one merchant blast furnace now is operating in the Pittsburgh and valley districts (Page 69.)

Drought Reports Are Less Distressing

Much of the gloom having been dispelled by rain over the sun-scorched farm areas, more reassuring reports are received. Little evidence of curtailment of steel purchases is noted at this time in the agricultural districts, while tin plate production still is confidentally expected to be within 10 per cent of that of 1929 (Page 32). In the old days we would have offered sacrifices to the gods for the rain; now the federal government makes available $121,875,000 for road work, the states to duplicate this sum, though farm work will keep farmers busy until late in the fall; when the real effect of the damage is felt cold will prevent road work in some of the states (Page 30). . . . Germany, too, is having more troubles than enough. Wage schedules of 300,000 coal miners in the Ruhr are canceled with the object of forcing reductions, and the miners are preparing to resist (Page 96). . . . "This was the dirtiest department in the shop last month," reads a sign used in an Ohio steel forging plant. Workers see it, say to themselves: "Now look at it!" Spick and span. Improved housekeeping cuts lost-time accidents from 581 to 49 in two years, and reduces medical expense by $4800 (Page 46). . . . Though experts continue to assure us much of our iron ore will have to be imported in 25 years, the drift of plant capacity continues westward. Indiana and Illinois added 21.7 per cent to ingot capacity in 1929, Pennsylvania only 4.6 per cent (Page 33.)

Courts Holds Scrap Dealer Necessary

Don't kick the scrap dealer, some day you may need him, cautions a Maryland circuit court, ruling that the dealer is a necessary intermediary. If it were not for him scrap producers would soon be at the mercy of consumers. This, in a case where a producer himself considered it to his best interest to break relations with a dealer in order to sell direct. (Page 24). . . . That a scrap dealer may be popular in his community, by taking in old material, salvaging the useful parts, and reselling them where new parts are not readily available is shown by the experience of one of these "intermediaries" in Panama City, Central America. His function is to save and sell everything that comes to him for which there may be a demand (Page 49). . . . New York railroads that produce large tonnages of scrap see an ever increasing amount moved by barge from the New York metropolitan area to Buffalo. This season the movement may reach a record figure of 100,000 tons (Page 24). . . . Eastern mills join in the fight for lower freight rates in the Pittsburgh district; if the rates are to be reduced they, too, want to share in the benefits (Page 32). . . . Railroads in general are employing 10 per cent fewer workers now than last year at this time, and there are no immediate indications of an increase (Page 78). . . . But "vacations" for industrial workers are not without some advantage for many, as they are taking theirs "with pay" (Page 81). . . . Industrial lifting jacks, that are always on the job, are manufactured at the rate of 40,000 to 45,000 a year. Including the type you put under the automobile to repair tires, jacks take 25,000 tons of a steel annually. (Page 59.)

Progress Germinates in the Laboratory

Out of the laboratories and into common experience constantly come new combinations of steel with other metals. More practical information becomes available; their use increases. Vanadium steel is showing a rapid rise. Use of vanadium as an alloying element in steel imparts improved physical properties and uniformity of response in heat treatment. The automotive and railroad industries are heavy consumers of steels containing this element. The principal steel contains 0.45 to 0.55 per cent carbon; 0.70 to 0.95 manganese; phosphorus a maximum of 0.045; sulphur a maximum of 0.05; and vanadium a minimum of 0.18. In a series of three articles, the first appearing in this issue, STEEL presents a comprehensive discussion of the development, properties and commercial applications of vanadium steels. (Page 43). . . . As pointed out in the Aug. 7 issue of STEEL, fuel economy in the operation of open-hearth and reheating furnaces is obtained through the use of mixed blast furnace and coke oven gas. That article pointed out that calorific qualities of the mixture are affected by varying the volume ratio of the gases. The concluding article presents thermal capacity characteristics of the two fuels and explains economies in the use of surplus and nonsurplus gas. (Page 50).

Rate of Progression in Steel and Population Slowing

COMPLETE census returns for the United States reveal a similarity between recent trends of population and steel production. The numerical gain in population between 1920 and 1930 was 17,000,000, the largest ever recorded at a ten-year interval. However, the percentage of increase, 16.1, was next to the smallest on record.

Steel runs a course somewhat like population, as output in 1929 was the highest ever attained in a single year, though the average gain in the past ten years over the preceding ten years dropped to the lowest point, 23 per cent. Population and steel production are at their highest, but the rate of increases are low.

Important changes in American economic life affecting steel may be perceived against the background of census returns. But growth of steel production cannot be well compared with that of population, year for year, with the census returns, because population increases continually, whereas steel output may fluctuate widely from year to year. The present is an example, with output of steel considerably lower than in 1929. Therefore, yearly tonnage over ten-year periods is averaged to show the percentage of gains by decades.

Successive Reductions in Gains

On this basis, steel production between 1870 and 1880 increased 1240 per cent. Transcontinental railroads were being built of steel, land transportation and communication facilities were being extended in every direction at an unheard of pace. Steel made a spectacular dash from a "standing start." In the same period population moved along 30 per cent.

Between 1880 and 1890 steel output increased 372 per cent, and population 26 per cent. A still slower rate of progression was made in the next decade, 165 per cent for steel, and 20.7 per cent for population.

From 1900 to 1910 the development of the automotive industry largely was the cause for an accelerated rate of steel output, and the gain was 186 per cent. Meanwhile, population held to its rate of advance with 21 per cent. In the following decade steel output increased 87 per cent, and population stepped ahead only 15 per cent, the smallest gain in the nation's history.

The average yearly output of steel in the ten-year periods, the percentage of increases for steel and the comparative percentages for population follow:

	Tons	% gain, steel	% gain, population
1861-1870	39,000	.....	.....
1871-1880	524,719	1,240	30.1
1881-1890	2,472,415	372	25.5
1891-1900	6,557,837	165	20.7
1901-1910	18,767,357	186	21.0
1911-1920	35,099,323	87	14.9
1921-1930	42,986,248	23	16.1

These comparisons show that neither steel production nor population is moving forward by such leaps and bounds as characterized the country's earlier development. This, notwithstanding new peaks in population and the amount of steel made and consumed.

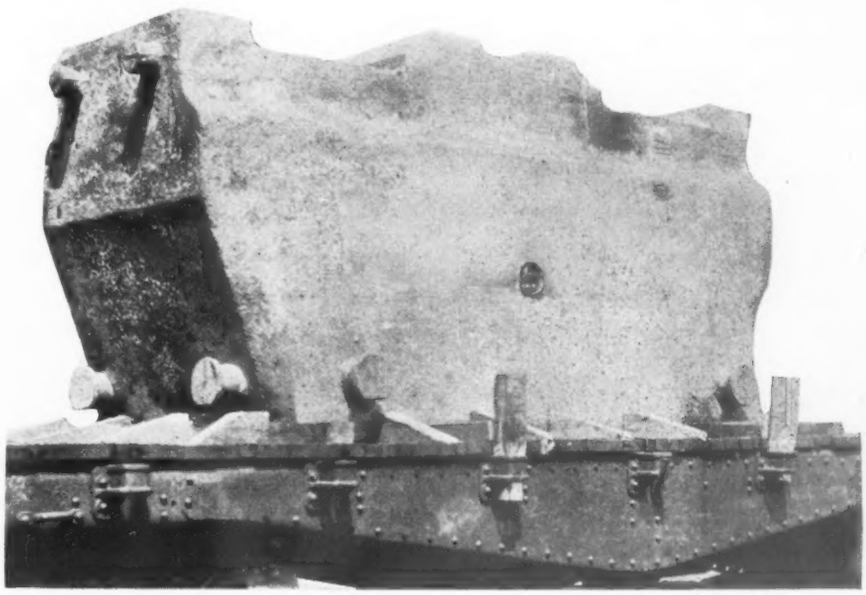
Factors deeper than the restriction of immigration have to do with the slower rate of progression. The tendency in regard to population was strongly apparent before this country decided to put in effect an immigrant quota law. A century ago successive census returns were showing gains of as high as 36 per cent. The downward trend set in between 1880 and 1890, with the beginning of our present industrial era.

The movement of population from farms to cities was one of the deciding factors. Farm labor was recruited to an important extent from large families. There existed an imperative economic demand for them. Meanwhile the "emancipation" of women was proceeding apace. They were finding deliverance from household drudgery, more so as places were found for them in manufacturing pursuits and various vocations, where they learned their earning capacity was nearly as great as that of men.

Probably the most important of all conditions, however, was that of "mechanization." With myriads of new machines doing the hard work formerly imposed on "hired hands" there was no longer the need for great gains in population; in fact, "normal" growth was so far outstripping requirements in this new age that the restriction of immigration was resorted to as a protective measure.

Steel, considered from a purely volume standpoint, undoubtedly has lost to some extent by a slowing in the rate of growth of population. As the usage of steel improves and established requirements become satisfied, the call for steel ceases to show such extreme gains as formerly. The country stands committed to the restriction of immigration, and strong voices demand further curtailment as unemployment pinches. Exhortations for larger families cannot alter the truth. Will new and more general uses of steel turn the tide?

American exports of construction machinery for five months of 1930 were 26 per cent in excess of those for the corresponding period of 1929. Dredging machinery doubled last year's exports for the five months.



IMAGINE A CHORUS WITH ANVILS SUCH AS THIS

One of the largest single-piece castings ever made in the United States, and reported the largest ever produced in Cleveland, was completed recently at the plant of the Otis Steel Co. The casting weighs 115 tons, is 13 feet long and nearly 7 feet high. It will be an anvil base for a 12,000-pound hammer being built by the Alliance Machine Co., Alliance, O., for the Taylor Forge & Iron Co., Chicago. Production of the casting required six weeks and three weeks additional for machining

Direct Scrap Selling Is Poor Policy, Says Court Opinion

COURT opinion that the middleman is a valuable link in the merchandising of steel and iron scrap is one result of tests of the validity of contracts involving that commodity. Incidentally a recent decision by the circuit court of Maryland upholds the contention of the Institute of Scrap Iron and Steel Inc. that direct dealing and direct exchange of scrap for finished material is inimical to business in general. Of less general interest, but a valuable contribution to stability of the industry is the finding of the court that penalty or reduction on rejected cars must be applied to the rejected tonnage only and not to the entire car.

The case which brought out this decision involves a contract between the Eastern Rolling Mills Co., Baltimore, and Simon Michlovitz, Harrisburg, Pa., a scrap dealer. It has been in the Maryland courts for two years, with the dealer's contention sustained in each successive court.

Sought Abrogation of Contract

A contract was made in 1927 for sale of the company's bundled steel and crop end scrap for five years at prices to be fixed quarterly at a differential below trade paper quotations on the Philadelphia market. Shortly after the death of the president of the Eastern Rolling Mill Co., J. M. Jones, an attempt was made to break the contract and to sell the scrap direct to Bethlehem Steel Co., which supplies most of the steel bars used by the rolling mill company.

The circuit court of Baltimore in 1928 found the contract fair and just and ordered specific performance and on appeal the court of appeals of Maryland confirmed the decision in March, 1929. Contempt proceedings were instituted on the charge the rolling mill company was delivering loose, unbundled and unsaleable scrap instead of the grade called for in the contract. In the opinion in this case the court ruled that penalties could be applied on the rejected tonnage and not on the entire carload.

The court further voiced an opinion on direct selling of scrap and the validity of the original contract, part of which follows:

"I do not think it is good policy to tie up the sale of your scrap with the steel company that you are buying your bars from. It seems to me the argument is perfectly idle to say that the sales should always be made direct from the Eastern Rolling Mill Co. to Bethlehem Steel Co. and anybody with knowledge of the economic conditions of business, would know that the minute the intermediary scrap man was eliminated from this market, and the Eastern Rolling Mill Co. found itself in the position of having to dispose of its own scrap to Bethlehem Steel Co., it could expect business competition and dickers.

"In my judgment, there is so little excuse for the breaching of this contract, that I cannot see why they hesitate about performing it. I think the contract is fair. I think it is wise, and I think it just, and I do not think that the profit is unreasonable."

Index Is Ready

The index to Volume 86 of IRON TRADE REVIEW, *for the first six months of* 1930, *now is ready for distribution. Copies will be sent to all subscribers desiring them.*

Ohio Scrap Dealers Try To Reduce Insurance Rate

A survey of scrap iron yards in Ohio has just been completed by two engineers of the state industrial commission, at the request of the Institute of Scrap Iron and Steel. The object is to determine ways and means of reducing risks and improving the compensation insurance rate structure for the scrap iron industry.

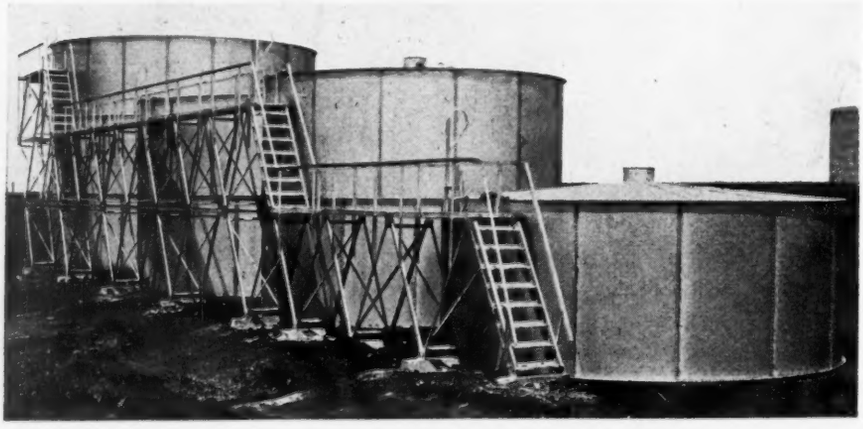
The action was taken by the institute as the result of an increase in the compensation insurance rate on scrap iron yards in the state from $7 to $8 per $100 of payroll, beginning July 1, 1930.

Large Tonnage New York Scrap by Barge to Buffalo

New York—With Bethlehem Steel Co., Bethlehem, Pa., now shipping scrap by barge to its Lackawanna plant in Buffalo, movement of this material out of the metropolitan district by waterway has become impressive. It is estimated that 75,000 to 100,000 tons of steel scrap will have been shipped by barge from this port before the season closes.

This is the first season for such a substantial movement of scrap out of this district by water. Early in the season New York brokers were paying about $11.50, barge, for the best grade of steel scrap for Buffalo. The market has sagged to about $10, and with Pittsburgh consumers offering $9.60, f.o.b. New York, the Buffalo price appears to be fairly well pegged.

On the basis of contracts near the present figure, cost to the Buffalo consumer is estimated at about $12.25 to $12.50, delivered. Bethlehem Steel Co. is using its own barges and the cost of transportation in this case is not clearly defined. In the case of the other two principal consumers the cost of barge transportation is $1.25 to $1.50, with the inside price obtainable on large tonnages. The commission charge is the usual 50 cents a ton with additional charges for necessary extra handling.



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STAIRWAYS ERECTED LIKE CHILD'S TOY

Interchangeable sections are used in assembling steel runways and stairways to provide access to storage tanks in the oil fields. The system is flexible and adaptable for other purposes. The runway is built up from angle sections fully fabricated at the plant and shipped knocked down to be bolted together. Each section consists of an angle welded frame 90 inches long and 30 inches wide with a diagonal brace. The system was developed by the Columbian Steel Tank Co., Kansas City, Mo.

Merger Quiz Brings Out Details in Republic Formation

COUNSEL for Bethlehem Steel Corp. managed to get into the record of the Bethlehem-Sheet & Tube merger case hearing this week some of the details of how Cyrus S. Eaton merged various companies into the Republic Steel Corp. This was after Judge David G. Jenkins, in the midst of prolonged testimony as to how accountants figured values, wanted to know why engineers had not appraised the Bethlehem and Sheet & Tube properties.

Facts heretofore carefully guarded in respect to the Republic merger were brought out when a confidential report on constituent properties made to Mr. Eaton by H. A. Brassert, Chicago engineer, was disclosed during the examination of Hassel Tippit, an auditor who was engaged by the Eaton interests in both the Republic and Bethlehem mergers. Tippit was questioned by Attorney F. H. Wood, of Bethlehem counsel.

Wood showed that in Mr. Brassert's report the engineer gave only "one-twelfth weight" to his own appraisal of various properties now forming the Republic corporation. The dominating weight was given to earnings, both past and present of the constituent companies.

Small Differences in Values

Mr. Tippit testified that Mr. Brassert did field work in the Republic merger negotiations, while Ernst & Ernst, the firm with which Tippit is associated, did the auditing. The figures finally were passed along to Mr. Eaton as the final arbiter. It was testified the auditors did not readjust the engineer's figures with plant depreciation in mind. The engineer's report showed comparatively small difference between book values and appraised values.

It discloses the Republic Iron & Steel Co. went in with $144,000,000 book value and $151,000,000 appraisal or replacement value, a variation of 6 per cent. The Central Alloy Steel Corp. was set off about equally, with $73,000,000 book value and $72,000,000 appraisal value. Donner Steel Co. had a book value of $24,000,000 and appraisal value of $31,000,000. The Bourne-Fuller Co. had a book value of $16,000,000, and appraisal value of $15,000,000, while its depreciation charges were almost doubled by the auditors to bring them in line with others. The omission of the Interstate Iron & Steel Co.'s figures seemed significant. Judge Jenkins asked a number of questions to bring out the differences between the bases for the Bethlehem-Sheet & Tube merger and the Republic merger.

The trial was resumed Monday, this week, after a lapse of a week due to the death of Myron C. Wick, one of the plaintiffs, and the probating of his will. Three of the executors of his estate, his widow, brother and brother-in-law, elected to proceed with the case, while the Dollar Savings & Trust Co., Youngstown, the fourth executor, becomes a defendant by reason of not having joined the other executors as plaintiffs.

A locomotive of today will run about twice as far between general repairs as it would 20 years ago because of the alloy steel used in its construction.

To Consider Manganese Ore

Washington—Seymour Lowman, assistant secretary of the treasury department, has invited Thomas J. Doherty, traffic counsel for the American Iron and Steel institute, to a conference in Washington, Aug. 22, It is said the conference is for a discussion of the manganese ore import situation. Secretary of the Treasury Mellon was petitioned Aug. 12 by the American Manganese Producers' association to suspend the liquidation of entries of manganese ore exported from Russia to the United States pending investigation by the treasury department. Violation of the antidumping law was charged.

Corporation Making Less of Total Output

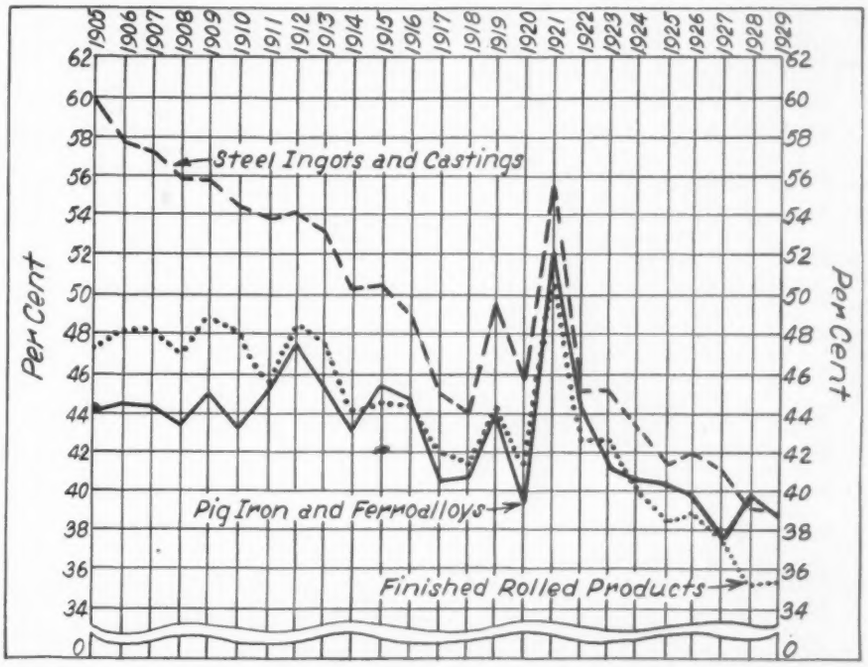

Chart shows percentage relationship which Steel corporation's output of various products bears to the total for all producers

PLANT capacity of the United States Steel Corp. in relation to the independents this year will not show much change from that of 1929, judging from preliminary estimates. Its capacity for steel ingots and castings last year was approximately 40 per cent of the total, whereas its output of these products, according to the statistical report of the American Iron and Steel institute was 38.8 per cent. This was the smallest proportion in its history. The reduction in percentage for four years has been slow but steady. Twenty-four years ago it produced 60 per cent of all the ingots and castings made in that year. Its output of finished rolled products in 1929 was 35.4 per cent of the total, slightly higher than in 1928, but with this exception the lowest on record. In 1905 it made 47.4 per cent of all finished rolled products. Its output of pig iron and ferroalloys in 1929 was 38.7 per cent of the total. Less shrinkage is shown in this department than in the others, as in 1905 and several succeeding years its production of pig iron and ferroalloys was around 44.2 per cent.

Steel Gains Great Tonnage From Long Pipe Lines

STEELMAKERS are the largest beneficiaries of the present trend of the natural gas and oil industry, and the tonnage of steel pipe being laid for transmission lines may profoundly affect the relative distribution figures of steel for 1930 and 1931. Activity in building lines of length heretofore considered impractical, coming coincidentally with slack demand for many other purposes, may raise oil and gas consumption of steel to a sufficiently higher percentage to rank above outlets heretofore much larger.

Never has the transportation of oil and gas products by pipelines been undertaken on so broad a scale as now. Lines as long as 1500 miles are being planned and put under construction. Estimates have given $259,000,000 as the cost of projects now under way or on the eve of being started.

Pipes Gas to Chicago

Eight lines are involved, totaling about 6500 miles of pipe. The largest is estimated to cost $110,000,000. It is the natural gas line of the Doherty-Insull-Standard interests, starting at Pampa in the Texas Panhandle, running across Kansas and crossing the Missouri river at Plattsmouth, Nebr., turning east at Omaha and going directly to Gary, Ind., and Chicago. It is designed to deliver 100,000,000 cubic feet of gas daily to Chicago. Another line is being built by the Missouri-Kansas Pipe Line Co., Chicago, from the Texas Panhandle to Indianapolis. It is estimated to cost $40,000,000.

A crude oil line is projected by the Union Gulf Corp., Pittsburgh, a subsidiary of the Gulf Oil Corp. of Pennsylvania, from Cushing, Okla., to Pittsburgh—a 10-inch line 1500 miles long, to transport crude oil to refineries in Toledo, O., Cleveland and Pittsburgh.

Another crude oil line from the same source to refineries of the Standard Oil Co. of Ohio at Cleveland and Toledo is being built by the Ajax Pipe Line Co., a subsidiary of the Standard Oil Co. of New Jersey. It will cross the Mississippi river near Alton, Ill.

A second line from the Southwest to Chicago is to be built by the Great Lakes Pipe Line Co., formed by the Continental Oil Co., Ponca City, Okla., and the Barnsdall Corp., New York. It will start in Oklahoma and run 1400 miles to Chicago. It will be used to transport gasoline, with capacity for 30,000 barrels per day, and will cost $12,000,000. Phillips Petroleum Co., Bartlesville, Okla., is building a line 800 miles long from Borger, Tex., to St. Louis, to carry 30,000 barrels of gasoline per day and cost $15,000,000.

Activity in the East includes a line by the Sun Oil Co., Philadelphia, from Marcus Hook, Pa., to Pittsburgh, Cleveland and Toledo, O.

Natural gas long has been in use in areas sufficiently near the West Virginia and other adjacent fields but transportation for such distances as now are proposed was not undertaken from these older fields. Estimated gas reserves in the Southwest run to thousands of billions of cubic feet and seem sufficient to warrant the tremendous expense of building these long lines. The natural gas will be used in a mixture with artificial gas and already changes in billing are being made, to charge by the therm, a unit of heat, rather than by the cubic foot as has been the custom in the past.

The steel industry has evolved methods of fabricating steel pipe in tonnages sufficient for these projects at a price making the investments worth while. Steel pipe has become almost a major product and mills formerly not using any of their plate tonnage for this purpose are developing methods for turning out pipe as an important product. The tonnage of this department will show a tremendous gain in 1930 and indications are that succeeding years will continue its tonnage as a much larger factor than in the past.

By midyear pipemakers had accumulated sufficient backlogs to assure full operation through the remainder of the year and projects now pending find difficulty in obtaining room on books, while delivery is uncertain. At least 500,000 tons of steel pipe for line purposes is booked.

Distribution Methods Are Changed

Projected gasoline pipe lines for most part follow transcontinental highways to simplify distribution. Bulk stations at intersections with lateral highways will supply retailers by aid of motor tank trucks. Each line thus becomes a gasoline belt supplying communities for 50 miles on either side. Estimates are that in the case of one transcontinental highway consumption of gasoline is five times the ultimate capacity of the projected line.

Statistics of pipe production for 1930 seem likely to show a great increase over previous years as a result of these unusually long lines. Wrought pipe and tubes for 1924 totaled 2,824,256 tons and for 1929 3,018,740 tons. Seamless tubes for 1924 totaled 261,157 tons, while in 1929 the production of this class of tubes was 1,303,485 tons, a tremendous increase.

Phillips Pipe Line Co., Bartlesville, Okla., has let a contract to Chicago Pneumatic Tool Co., New York, and Byron-Jackson Co., Berkley, Calif., for most of the engines and pumps required for the seven pump stations on its Borger, Tex.-St. Louis gasoline line. The former secured 19 units 265-horsepower vertical type engines and the latter the same number of four-stage centrifugal type pumps of 30,000 barrels capacity

GAS GOES UNDER FATHER OF WATERS

Transcontinental pipe lines, several of which are in process of construction, know no obstacles. Their paths lie over hills and under rivers. The laying of five large gas lines across the Mississippi river during low water season is shown. The joint couples weigh 1800 pounds each, serving to anchor the lines and prevent leaks, as well as providing a certain flexibility to the line

each. Waukesha Motor Co., Waukesha, Wis., and Clark Bros. Co., Olean, N. Y., secured one engine each while Worthington Pump & Machinery Corp. secured two pumping units.

Union Gulf Pipe Line Co. has awarded operating equipment for a section of its Oklahoma-Pittsburgh 10-inch crude oil line from Jenks, Okla., to Toledo, Ohio. Worthington Pump & Machinery Corp., New York, will furnish 28 units, 18,000-barrel capacity, reciprocating type pumps and McIntosh & Seymour Corp., Auburn, N. Y., will furnish same number of Diesel engine units for the 14 pumping stations. Plans have been temporarily held up on the construction of the Toledo-Pittsburgh section of the line.

Great Lakes Pipe Line Co., owned jointly by Continental Oil Co. and Barnsdall Corp., has let contract for engines and pumps on its main line from Barnsdall, Okla., to Chicago and Minneapolis. The Prescott Co., Menominee, Mich., was awarded 42 horizontal duplex units for pumping and Winton Engine Co., Cleveland, was given the same number of engines, diesel oil burning type. There will be two units of engines and pumps for each of the 21 pump stations. Sheehan Construction Co., Tulsa, Okla., has been awarded the general construction contract.

Republic Steel Corp. Initial Report Shows Small Decline in Earnings

REPUBLIC Steel Corp., Youngstown, O., in its first earnings report since its formation in April gives net earnings for the quarter ending June 30 at $1,171,465 after all charges, before bond interest. After deducting $885,993 for bond interest there remains $285,472 available for dividends. This compared with combined net profits of $1,357,769 for first quarter, of the companies merged to form the corporation. During the quarter the company deducted $3,146,272 for maintenance and repair of plants and $1,893,984 for depreciation, renewal and exhaustion of minerals.

Combined profits for six months were $1,643,241 and dividends requirements were $1,590,000.

Chairman Makes Statement

Tom M. Girdler, chairman of the board, said in his statement to stockholders:

Your management has devoted its energies to forming a compact, efficient organization co-ordinating the various operations and effecting fundamental economies. At the outset the temporary disadvantages incident to such major changes are reflected before the benefits may be realized. This feature has been aggravated by a decline in volume of business and in prices to the lowest point in several years. Much progress has been made and the effect should become increasingly apparent in future operations. A return of normal business conditions is confidently expected to show gratifying results.

Pittsburgh Steel Co., Pittsburgh, reports for the quarter ended June 30 a net profit of $341,007 after interest, depreciation and taxes, equal after 7 per cent preferred dividend, to 62 cents per share on 253,500 shares of common stock compared with net of $1,422,548 or $4.89 a share in the final quarter of the preceding fiscal year. For the fiscal year ending June 30, 1930, the company shows a net profit of $1,683,149 after charges, equal to $3.74 a share on the common, against $15 a share for the previous fiscal year.

Continental Shares Inc., largest of the Cyrus S. Eaton investment trusts, recently revealed its holdings in common stocks of the steel industry, showing roughly half of its approximate $100,000,000 holdings in the following companies: Republic Steel Corp. common stock, 201,888 shares, Inland Steel Co. common, 1000 shares, Wheeling Steel Corp. common, 3243 shares, Youngstown Sheet & Tube Co. common, 21,150 shares, Cleveland Cliffs Corp. common, 265,203 shares, and Cleveland Cliffs Corp. voting trust certificates, 136 shares. Net profit in the six months ended June 30 totaled $18,329,190 of which $15,680,570 was from securities' sale and $2,648,620 from dividends and interest on holdings.

Michigan Steel Corp., sheet steel producer, earned $628,436 for the first half of 1930 after depreciation and taxes, equivalent to $2.86 a share on 220,000 shares of no par stock. For the first half of 1929, $1,180,000 or $5.36 a share was earned. Net profit for the second quarter of 1930 amounted to $306,155 after the above charges, which is equal to $1.39 a share, compared with $322,281 or $1.47 a share in the preceding quarter. In the June quarter of 1929, earnings totaled $592,667, or $2.69 a share.

Michigan Steel Corp. is offering to holders of common stock of record Aug. 22 the right to subscribe to additional shares in the ratio of one share for each ten shares held. The offering will require the issuance of 22,500 shares and rights will expire Sept. 22.

Ludlum Steel Co., Watervliet, N. Y., reports a net loss of $95,428 for the six months ended June 30, after charges, reserves for depreciation, taxes and deductions. For the second quarter of 1930 the company reports a net loss of $45,579 after the above charges. The company reported a profit of $701,395 for the first half of 1929 and net income of $311,958 in the second quarter of last year.

Superior Steel Corp., maker of hot and cold-rolled strip steel, reports a loss of $182,359 for the six months ended June 30, 1930, after depreciation, taxes and interest deductions. This contrasts itself with a net profit of $181,377, equal to $1.58 a

(*Concluded on Page* 30)

ALL-STEEL GASOLINE SERVICE BARGE APPEARS

Approximately 70 tons of shapes and plates were used in this barge, all welded, launched Aug. 5 at Elizabethport, N. J., for the Richfield Oil Corp., New York. It is reported to be the first vessel built especially for fueling power boats and seaplanes along the Atlantic coast, and is an experimental unit to determine an ultimate design for standard all-steel service stations, to operate under their own power. It was built by the Truss Weld Barge Co., Elizabeth, N. J., is 50 feet long, 30 feet wide, and 4-foot draft, containing three 10,000-gallon tanks, built integral with the hull

Industrial Men in the Day's News

Howard H. Bristol, President, Bristol Co., Waterbury, Conn.

AT the age of 42 he becomes president of the company founded by his father and uncle when he was but one year of age.

ENTERING the company upon graduation from college, he devoted his entire time to research and development work in connection with its products, namely recording instruments.

DURING the past twenty years he has been chief engineer, vice president, assistant treasurer, director and general manager.

DESCENDED from Henry Bristol, founder of the Bristol family in Connecticut and an early settler of the New Haven colony, who died in 1695, Howard H. Bristol all his lifetime has been identified with New England industry and prominent in the affairs of one company. As noted in STEEL of July 31, he was elected president of the Bristol Co., Waterbury, Conn., to succeed the late William H. Bristol, former president, who, with Franklin B. Bristol, father of Howard H. Bristol, founded the company in 1889, which since has become internationally famous for its line of recording instruments adapted for making continuous records of pressure, temperature, electricity and motion.

Howard H. Bristol was born at Naugatuck, Conn., Jan. 23, 1888, and obtained his early schooling at Waterbury and Naugatuck grammar schools. He was graduated from Hotchkiss school, Lakeville, Conn., in 1906, and also was graduated from Stevens Institute of Technology, Hoboken, N. J., in 1910 with a mechanical engineer's degree.

Immediately upon graduation he entered the employ of the Bristol Co., devoting his entire time to research and development work. In 1912 he organized the engineering department and was appointed chief engineer. He occupied that position until 1920, when he was elected vice president and assistant treasurer as well as director and general manager. He held these offices until this year when he was chosen to fill the vacancy caused by the death of his uncle, William H. Bristol.

He also is director of Naugatuck National bank, Naugatuck Water Co., Naugatuck Building & Loan association, all of Naugatuck, Conn., and director of Miller & Peck Co., Waterbury. He is a member of American Society of Mechanical Engineers and during the years 1920 to 1924 he served as burgess on the board of wardens and burgesses of Naugatuck and at present is a member of the board of education of Naugatuck.

T. R. LANGAN, manager transportation division, northeastern district, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has also been appointed assistant northeastern district manager with headquarters at New York. Mr. Langan has been with the Westinghouse organization for more than 20 years. He commenced as an apprentice in the engineering department and advanced through construction, service and sales departments to the office of manager of the transportation division, northeastern district. He has been identified with major high voltage alternating current railroad electrifications in the United States and when the New York, New Haven & Hartford system was electrified he served in an advisory capacity for seven years. Prior to locating in New York, Mr. Langan was with the Westinghouse offices in Philadelphia, Baltimore, Buffalo and Syracuse, serving as manager of the latter office.

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C. K. Pevear, formerly with the Western Electric Co. Chicago, is now affiliated with the Lamson Co. Inc., Syracuse, N. Y., manufacturer of conveyors and pneumatic tubes.

For many years he was an independent industrial engineer, before he was employed by the Western Electric Co. Material handling systems installed at the Hawthorne, Kearny and Point Breeze plants of the Western Electric Co., as well as those in its distributing warehouses, have been valuable contributions to the art of material handling. His articles on the subject have focused the attention of executives on the utilization of modern conveyor equipment. He will be located in the Chrysler building, New York, and will work on problems that many industrial managers feel are not solved by the present material handling machinery and methods.

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T. L. Lewis, formerly general manager of sales, A. M. Byers Co., Pittsburgh, has joined the sales staff of Norvell-Wilder Supply Co., Beaumont, Tex., in charge of the tubular goods division. After Sept. 1 his

headquarters will be situated in Houston, Tex.

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A. H. Schaffert, works manager Truscon Steel Co., Youngstown, O., has been appointed vice president of the company.

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M. I. Shea and George E. Clifford have been appointed assistant managers of the pipe division of Republic Steel Corp., Youngstown, O. Mr. Clifford until Aug. 1 was manager of the Pittsburgh division, A. M. Byers Co., and Mr. Shea has been identified with Republic Iron & Steel Co. pipe sales department for thirteen years.

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F. J. Selinger Jr. has been appointed sales manager, Pennsylvania-Dixie Cement Corp., 521 Fifth avenue, New York. He became associated with this company several months ago after a 23-year connection with Atlas Portland Cement Co.

B. W. Druckenmiller, for two years sales manager of the Pennsylvania-Dixie Cement Corp., has been appointed assistant general sales manager. Mr. Druckenmiller formerly had been 16 years with the Crescent Portland Cement Co., Wampum, Pa.

Stoker Sales Hold Upturn

Mechanical stokers in July held to the June rate with 150 units sold, from reports made by 11 manufacturers to the department of commerce. A continuation of the June level, which was the highest since October, 1929, is regarded as a favorable sign of recovery from the decline of the first quarter of 1930, as revealed in the following:

1929	Stokers sold	Fire tube boilers	Water tube boilers
July	186	88	98
Total (7 mos.)	998	379	619
August	199	94	105
September	155	71	84
October	178	89	89
November	107	43	64
December	79	30	49
Total (year)	1,716	706	1,010
1930			
January	53	24	29
February	73	26	47
March	89	45	44
April	108	46	62
May	96	41	55
June*	151	70	81
July	150	83	67
Total (7 mos.)	720	335	385

*Revised.

Electric Orders Are Lower

Orders booked for electrical goods in second quarter were valued at $276,756,039, as reported to department of commerce by 81 manufacturers. As shown in the following a decline of 7 per cent is revealed from first quarter of 1930:

Quarters	1929	1930
1st	$322,424,619	$298,733,208
2nd	340,863,112	276,756,039
3rd	338,169,678	.....
4th	288,696,415	.....
Total	$1,290,153,824	.....

Machine Tool Orders Present No Encouragement

Total index of net orders for machine tools in July fell to 88.4 and the three-months average to 117.3.

T. R. Langan

This is the lowest point the index has reached since March, 1925. Shipments at an index of 128.1 also were under the average rate of 206 for the first half of 1930. Unfilled orders likewise slumped badly from 282.3 for June to 235.3 in July. Index of orders by the three classifications follows, from the National Machine Tool Builders' association, Cincinnati:

*Index percentage of the total base.

1929	*Index A	*Index B	*Index C	Total
June ..	315.6	308.4	346.4	315.2
July ...	296.2	284.6	324.6	294.8
Aug. ...	284.2	279.7	272.6	286.1
Sept. ..	268.5	258.6	252.3	265.8
Oct.	295.4	263.0	269.0	287.0
Nov. ...	250.8	235.7	261.2	247.2
Dec. ...	224.0	212.7	258.3	222.1
1930				
Jan. ...	173.8	171.9	226.8	175.4
Feb. ...	170.3	169.1	213.6	172.6
March	172.8	184.0	219.7	177.8
April ..	167.6	197.7	214.4	176.8
May	155.2	191.2	195.3	165.1
June ...	137.6	171.6	169.4	146.7
July	106.6	146.5	146.9	117.3

*Note—Index A, base over $50,000; Index B, base $10,000 to $50,000; Index C, base less than $10,000. Base: average shipments for years 1922-23-24. Totals: The total of all reports is not an average of A, B and C, but the sum of each item in

Sheet Sales Increased; Output Lower in June

Daily average sheet sales by independent mills in July increased to 6690 tons for 6247 in June. Production decreased to 6007 tons from 6856 tons in June, and shipments dropped to 6282 tons from 7100 tons in June. The National Association of Flat Rolled Steel Manufacturers' complete report for July follows:

	Sales	Production	Shipments
June, 1929	307,911	337,841	347,989
July	337,222	323,905	344,676
August	282,107	366,734	365,649
September	274,568	302,490	301,330
October	258,810	319,660	291,135
November	134,391	204,071	207,200
December	234,599	181,916	178,575
January, 1930	382,122	291,529	241,677
February	203,315	275,952	241,441
March	299,764	259,658	275,235
April	300,086	308,988	291,601
May	204,589	274,220	266,436
June	137,412	205,675	212,930
July	207,400	186,206	194,767

A comparison of monthly totals follows:

	Net tons	Per cent of capacity
Total sales for July	207,400	56.2
Total production	186,206	50.4
Total shipments	194,767	52.7
Unfilled tonnage as of August 1st	432,298	117.0
Approximate finished stock on hand awaiting shipments	119,974	32.5
Approximate in stock, unsold	82,708	22.4

The total sheet capacity of the United States for the month of July, 1930, is approximately 546,500 net tons. The capacity on which the above figures are based is 369,400 net tons.

Truck Shipments Recovering

Electrical trucks and tractors shipped in July totaled 108 units, compared with June's 95, which was the low month for the year. Recovery was confined largely to domestic shipments, exports, falling off, according to department of commerce:

1929	Total	Shipments—Domestic	Export
July	168	163	5
(7 mos.)	1,271	1,196	75
August	154	144	10
September	158	151	7
October	167	134	33
November	118	110	8
December	151	124	27
Total (year)	2,019	1,859	160
1930			
January	140	123	16
February	113	106	7
March	123	109	14
April	106	101	5
May	144	125	19
June	95	63	32
July	108	99	9
(7 mos.)	829	726	106

McWane Cast Iron Pipe Co., Birmingham, Ala., has taken out $593,700 group insurance on its employes.

Obituaries

DR. IRA N. HOLLIS, 74, president from 1913 to 1925 of Worcester Polytechnic institute, Worcester, Mass., and president in 1917 and latterly honorary member of American Society of Mechanical Engineers, died Aug. 15 at his home in Cambridge, Mass., of a heart attack. During the World war Dr. Hollis served on the fuel conservation committee for Massachusetts and as chairman of the committee for public safety in Worcester. He was born at Mooresville, Ind., in 1856 and was graduated from United States naval academy in 1878. He served as an engineer in the navy until 1893, when he resigned to become professor of engineering at Harvard university. He remained until 1913, resigning to become president of Worcester Polytechnic institute.

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W. H. Cowell, formerly secretary and treasurer of the Wellman Engineering Co., Cleveland, died recently. He was also affiliated with the Midland Bank of Cleveland. Burial was in Montpelier, Vt.

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Carlton B. Stetson, 35, of the public relations staff of the Western Electric Co., New York, died recently following an operation for appendicitis.

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John K. Finlayson Sr., 84, Tulsa, Okla., pioneer manufacturer of oil well tools, died Aug. 10 at Silver Lake, Iowa. He retired from business in 1919, following sale of his plant to Hinderliter Tool Co. of Tulsa, but continued as a stockholder in the latter company.

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George Davidson, 71, Beaver, Pa., director of Union Drawn Steel Co., Beaver Falls, Pa., died at his home, Aug. 15. He was president, First National bank, Beaver Falls, and president Old National bank, New Brighton, Pa. He also was president and director of the Ideal Foundry & Machinery Co., Beaver Falls, and was identified with other manufacturing and financial organizations in the Pittsburgh district.

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Arthur S. Holmes, president of the Holmes Engineering Co., Oshkosh, Wis., died Aug. 11, following a heart attack. He was 55 years of age. From 1914 to 1929 he was vice president and sales manager of the Green Bay Drop Forge Co., Green Bay, Wis., and designed a line of high-production, semiautomatic machines for the automobile industry, resigning Jan. 1, 1929, to devote his entire time to the Holmes Engineering Co., designing and building special machinery.

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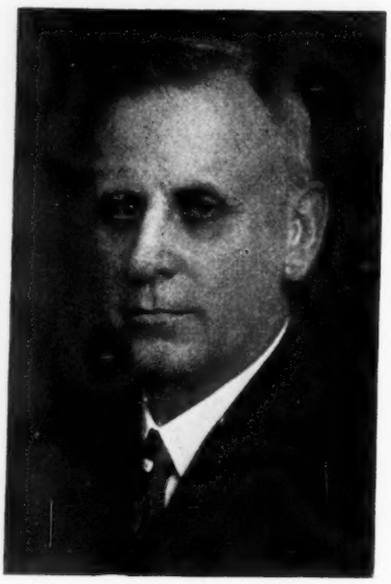
James Harvey Edwards, 66, chief engineer of American Bridge Co., subsidiary of United States Steel Corp., died Aug. 14. Mr. Edwards was born in Oxford, N. Y., was a graduate of Oxford academy, Cornell university, and prior to the beginning of his affiliation with American Bridge Co. in 1900, was assistant chief engineer of Berlin Iron Bridge Co., East Berlin, Conn.



James Harvey Edwards

Drought Broken; Huge Sums for Road Work

Washington — Rain has broken the prolonged drought in most of the agricultural areas of the country and a distinctly better tone is apparent in the reports coming to Washington. It is believed the rain prevented much of the anticipated damage, and that results will not be as serious as at first supposed, although hardships will be felt in many of the farm areas this winter.

Following conferences between President Hoover and the governors of 13 states the federal government has allocated $121,875,000 to aid road work in the various states. The states can now advance the amount to be received from the government and their own amount, which must equal the federal apportionment. A large portion of the money will be immediately available. The great majority of the farmers, however, will be kept occupied with their farms until late in the year, when road work will be made impossible by weather conditions in many of the states affected by the drought. Relief committees are being formed by the Red Cross.

Financial Reports in Drop

(*Concluded from Page 27*)

share in the first half of last year. The net loss for the quarter ended June 30 amounted to $108,979 against net loss of $73,380 in the preceding quarter. A net profit of $73,025 was shown for the second quarter of last year.

Universal Pipe & Radiator Co., New York, reports net earnings for second quarter after all deductions, including depreciation, bond interest and federal taxes as $28,505. This compares with a deficit of $114,020 for first quarter and a profit of $115,241 for second quarter of 1929.

Pittsburgh Screw & Bolt Corp., reports net earnings for first half of 1930 as $1,249,479 or 83 cents per share, compared with $1,668,476, or $1.11 per share for first half of 1929.

National Enameling & Stamping Co., Milwaukee, reports for the six months ending June 30, 1930, a net loss of $13,542 after depreciation and taxes. This compares with net profit of $164,686 or $1.05 a share in the corresponding six months of 1929.

Chain Belt Co., Milwaukee, reports net earnings after all charges, including depreciation, Wisconsin state income taxes and federal income taxes for the six months ended June 30, 1930, were $412,780, equivalent to $3.43 a share on 120,000 shares of common stock outstanding. Net for the similar period in 1929 was $443,467, or $3.69 a share.

Continental Roll & Steel Foundry Co. shows earnings for six months ended June 30 were 6.46 times interest requirements on its $4,000,000 first mortgage convertible 6 per cent sinking fund gold bonds due June 1, 1940. Dividend requirements on the company's $3,000,000 7 per cent preferred stock were earned 5.49 times. Earnings per share on the common stock amounted to $2.18 for the six months' period. Continental Roll & Steel Foundry Co. was formed in June through acquisition of assets and business of Duquesne Steel Foundry Co. Pittsburgh.; Hubbard Steel Foundry Co., East Chicago, Ind., and Wheeling Mold & Foundry Co., Wheeling, W. Va.

Detroit Tap & Tool Co., Detroit, has changed its capitalization from $15,000 to $250,000 shares no par value.

Here and There in Industry

INLAND STEEL CO., Chicago, has completed its new merchant bar mill at the Indiana Harbor works, which has been under construction for more than a year. This is the third bar mill at this plant and rounds out service for bar consumers in the Central West. Finishing on 10-inch rolls this mill is equipped to produce smaller sizes of rounds, flats, squares and shapes, as well as bands, down to No. 12 gage, and coiled material.

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Chicago Pump Co., Chicago, has appointed H. G. Ragan its representative at Omaha, Nebr., with offices in the Brandeis Theater building.

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Chicago Bridge & Iron Co., Chicago, represented at Seattle for a number of years by the A. A. Hilton Co., has opened a branch office at 422 Smith tower, with R. L. Hilton in charge.

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Keystone Chromium Co., 1095 Niagara street, Buffalo, has taken over the Parker Rustproof Co., 460 East Eagle street, and will unite the two corporations in its plant. Both control processes for metal finishing.

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Prosperity Co. Inc., Syracuse, N. Y., has purchased a controlling interest in the Daly Mfg. Co., Cincinnati, manufacturer of garment pressing machinery. The Cincinnati plant will be continued, its line being marketed by the new owners, who operate in a similar field.

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American Iron & Metal Co. has opened for business at 109 East Twenty-first street, Erie, Pa., under the management of Philip L. Blum. It will deal in scrap metal. Mr. Blum has been engaged in the scrap business for many years. Morris Rubin also is a member of the firm.

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Michigan Steel Corp., Detroit, has completed erection of steelwork for an addition to its plant at Ecorse, Mich., which will provide added space for bar storage, a roughing building, finishing building warehouse and two pickling buildings.

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Haynes Stellite Co., Kokomo, Ind., a unit of Union Carbide & Carbon Corp., has completed a new foundry at the Kokomo works, designed for production of its new acid-resistant alloy. It has been furnished with the most modern equipment to give close control of quality and uniformity. The new alloys are resistant to hot and cold hydrochloric acid and moist chlorine.

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Fowler Oil Burner Co., Worcester, Mass., is planning to establish a branch plant in Canada for production of burners. Philip M. Morgan is president in addition to his connection with the Morgan Construction Co., Worcester.

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Lafayette Steel Products Co., Lafayette, Ind., manufacturer of metal baskets and automobile trunks, has been reorganized with Henry Poor president, L. E. Rush vice president, J. H. Rush secretary and E. J. Smith manager. The officers and Perry Wright constitute the board of directors.

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Copperweld Steel Co., Rankin, Pa., has taken an order from the New Zealand government for long-span power conductors to be used for the 5200-foot river crossing of a transmission line now being erected. It is designed for the high tensile strength of steel with corrosion-resisting and current-carrying properties of copper.

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Federal Mogul Corp., Detroit, manufacturer of bronze bearings, washers, castings and bushings, has acquired the Watkins Mfg. Co., Wichita, Kans., which operates service stations in principal automotive centers. Its main business is rebabbitting of connecting rods.

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Combustion Engineering Corp., New York, has taken a contract from the Brooklyn Edison Co., Brooklyn, N. Y., for eight boilers and accessories for installation in the Hudson avenue generating station. The contract will involve more than $2,000,000. It includes in addition to the boilers complete water-cooled furnaces, boiler settings and steel work and economizers, all to be designed and installed by the Combustion corporation.

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Inland Steel Co., Chicago, has placed an order with H. A. Brassert & Co., Chicago, for changing its mechanical tower washer to a static tower washer and for two disintegrators for fine cleaning blast furnace gas. Illinois Steel Co., Chicago, has placed an order with the Brassert company for two disintegrators for its South works and four high-efficiency hot blast stove linings for the Gary plant.

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Fusion Welding Corp., Chicago, has opened a sales office at 1412 Santa Fe building, Dallas, Tex., in charge of M. P. Hare, formerly of the Tulsa office. A warehouse has been established at Houston, Tex.

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Pratt & Whitney Co., Hartford, Conn., has bought the John-Sons Gage Co., Hartford, manufacturer of screw thread gaging and measuring tools used in automotive and aeronautical industries.

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Inland Steel Co., Chicago, has started work at its Indiana Harbor plant, Indiana Harbor, Ind., to reclaim 50 acres from Lake Michigan for future expansion. A pile abutment has been placed and slag and plant waste will be used to fill the shallow shore waters.

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U. S. Steel Grave Vault Co., Galion, O., has given a contract to the Austin Co., Cleveland, for a new plant, 90 x 280 feet, to double its capacity. A boiler room will be 20 x 40 feet. The building will be of structural steel with concrete floor and steel deck roof.

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Air Reduction Co. Inc., New York, has incorporated in Texas a wholly-owned subsidiary under the name of Magnolia Airco Gas Products Co. It has acquired the business and assets of the Magnolia Gas Products Co., with oxygen plants at Houston, Beaumont and San Antonio, Tex., and an acetylene plant at Houston, Tex.

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Moloch Foundry & Machine Co., Kaukauna, Wis., manufacturer of power hammers, pumps, automatic stokers and other specialized machinery, is making an issue of $100,000 in first mortgage bonds to cover part of plant extensions made during the past year at a cost of upwards of $200,000. The improvements include an electric steel foundry handling castings up to 10,000 pounds in commercial electric steel or alloy steel. R. M. Kanik is president and general manager.

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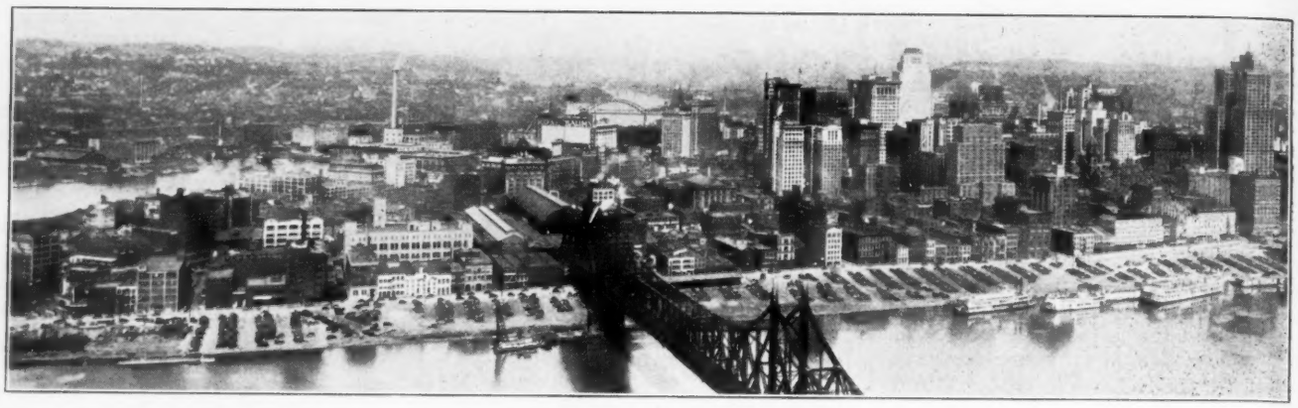
Mid-Co Oil Well Tool Co., capitalized at $250,000, has been organized at Tulsa, Okla., to manufacture and distribute oil well tools and measuring devices. William J. Ross is president, Howard Schneider, vice president, and R. C. Mason, mechanical engineer in charge of manufacturing. Plans are being made for construction of first unit, a machine shop, 40 x 140 feet. Offices have been established in the Tuloma building, Tulsa.



F. o. b. PITTSBURGH

PITTSBURGH

JULY marked the low point of steel production for the year to date in the Pittsburgh district and although hope is entertained for a mild improvement before the end of the month there are few encouraging signs on the horizon. Inquiry is reported as slightly heavier recently but the hesitancy to resume more active buying continues. Spotty conditions still prevail in demand for various steel products. Pipe mills continue the most active in the industry with the outlook for the remainder of the year improved by the probability that some additional line pipe tonnage will be entered upon books shortly. Demand for large diameter tubular material largely offsets the quietness that has prevailed since the first of the year in buttweld pipe and the smaller sizes of seamless pipe.

Plates and shapes are doing relatively better than the majority of steel products, the former benefitting by the activity of lapweld pipe mills. Shape tonnage has been steady although moderately below the volume of last year. Bars, sheets, strip and wire products remain dull with improved operations in automotive centers recently providing less than the anticipated stimulus to demand for these products. Placing of annual rail orders is 30 to 60 days off.

Eastern Mills Seek Share in Rate Reductions

July's low rate of steel ingot production, amounting to 112,823 tons daily, was the smallest since 1924 but was well above the dull 1921 and 1922 periods. Today, however, "Pittsburgh plus" is not receiving the attention which sprung up in the latter two years as well as in previous depressions in the steel industry. The old base is gone and the situation now is reversed with Pittsburgh steel consumers as well as producers attempting to extricate themselves from freight rate structures which they fear will give a strong advantage to other producing districts and add considerably to costs of nearby steel consuming plants. This applies particularly to freight rates on short hauls outside Pittsburgh's miniature switching area. The protest on this subject has become more involved with eastern Pennsylvania mills last week putting in their bid at the Harrisburg hearing for a share of what reduction may be made the Pittsburgh district.

Pittsburgh prices on steel products today bear a stronger resemblance to the 1921 situation than does the rate of production. Basic pig iron at $18, valley, is at the same level. Beehive coke is 15 cents lower than nine years ago; sheet bars are off $1; bars, shapes and plates are $2 a ton less; black sheets have dropped $11, galvanized sheets $18 and wire nails $14.

Tin Plate Less Affected By Drought Than Feared

Tin plate, its outlook clouded slightly as the result of the protracted drought, is proceeding at a not unfavorable pace. Tin plate probably will be less affected by crop damage than has been assumed and in some cases reported. The pack of peas, which in recent years has totaled between 17,000,000 and 19,000,000 cases, largely is completed. Corn and tomatoes run to smaller packs and while these crops have been affected by the unfavorable weather, the absence of a sharp curtailment in tin plate requirements of canmakers indicates that the damage will be less than had been feared.

In addition, packs of fruits and some other vegetables have escaped the ravages of dry weather and coupled with a fair tin plate demand for general line can requirements give the industry an even chance of completing a year comparing considerably more favorably with recent years than that for the steel industry as a whole. A reduction of 10 per cent from the 1929 tin plate output was predicted at midyear for 1930 and still appears a fair estimate, subject, however, to a more accurate appraisal of crop damages and the extent of the drought.

The long dry spell has had less than the usual effects upon mill operations in the district. Operations have been light and workers plentiful, giving the opportunity for frequent changes of men on the turns. In addition, the men have been reluctant to lay off work, realizing that other individuals were anxious to fill their places. Serious difficulties would have been presented a year ago had recent weather prevailed at that time when production was aimed at capacity and labor well engaged. Just how steel business itself will fare at the hands of the drought's aftermath, however, remains to be seen since so far there is little evidence of a curtailment in steel purchases by the agricultural districts. Producers of wire products look for some decline in direct purchases while the steel industry in general fears that a reduction in purchasing power of the farmer will be reflected in his demand for other commodities in the near future.

Builders of Steel Mill Equipment Are Busy

Local builders of heavy steel mill equipment, including the Mackintosh-Hemphill Co., Mesta Machine Co. and United Engineering & Foundry Co., enjoyed a busy first half and have a favorable outlook for the remainder of the year. Unfilled orders of Mesta on July 1 at $5,286,000 showed little change from the volume at the opening of the year. Business in rolls has been poor as was to be expected in view of poor operations of finishing mills, but quietness in this department has been more than offset by activity in equipment demand.

Expansion programs of the Nation-

al Steel Corp. and the Illinois Steel Co. call for additional purchases while the Jones & Laughlin Steel Corp. remains to dispose of the $20,000 its directors have authorized for construction supposedly at the Aliquippa and Pittsburgh plants. Carnegie Steel Co. is spending $5,000,000 on improvements, much of it being devoted to the Mingo Junction, O., works with blast furnace work predominating.

Freight car builders are in a less satisfactory condition than the machinery companies as regards future business. Orders have been light for several months and the end of backlogs gradually is being aproached. The Pressed Steel Car Co., however, still is well engaged at its McKees Rocks plant with employment fairly close to the high point of the year. Bookings of the Koppel Industrial Car & Equipment Co., a Pressed Steel subsidiary, have been expanding recently.

Barge Lines Supplement Gasoline Pipe Systems

Barge business continues quiet and has been disappointing all year. Awards to Aug. 1 were only about one-half the 220 barges placed during the first seven months of last year and steel tonnage involved dropped from 47,000 tons to 15,000. The poor demand for river equipment is ascribed largely to the general business depression since several lines had purchases in prospect earlier in the year. Inquiry at present is in fair volume but buyers are slow to close. With the resumption of better business conditions barge builders look for improved activity since interest in river shipments still is rising and plans for terminal facilities at various points are progressing. The Baltimore & Ohio railroad recently filed a petition for a federal permit to construct a rail-river terminal in the Monongahela river to be used in the trans-shipment of coal to points on the Ohio river.

Barges are assuming importance as a supplementary agency to pipe lines in the transportation of petroleum products. The Standard Oil Co. of New Jersey pipes gasoline from the Atlantic coast to Midland, Pa., where storage facilities are available, distributing it thence by barges throughout the Pittsburgh district. The Gulf Refining Co. also plans to use water transportation through the Mississippi-Ohio system. This company through its subsidiary, the Union Gulf Corp., has started construction of a new refinery at Neville Island which will be the Eastern terminal of a pipe line to be laid from Tulsa with branches to Cincinnati and Toledo where other refineries are to be built. This pipe, about 100,000 tons, was placed with the National Tube Co.

A terminal will be built at Louisville to which gasoline and oil products will be brought by barges from New Orleans following shipment to the latter point by tankers from the company's Texas plants. This will make Louisville a distributing center.

River Shippers Are Reaping Large Benefits

Water transportation is enabling the Wheeling Steel Corp. to compete for pig iron business in the nearby Pittsburgh district. This company recently commenced shipments of pig iron by water to the Allegheny Steel Co. at Brackenridge, Pa. on the Allegheny river. Barges are sent upstream loaded with iron, returning with a cargo of coal for the Wheeling coke ovens at East Steubenville, W. Va.

River shippers are reaping the benefits of the many millions expended in the canalization of the Ohio river and its tributaries during recent years. These streams have been given a severe test by drought conditions over the past two months but barge line operators report that the series of locks and dams has provided an ample pool stage from Pittsburgh to the Mississippi river. Formerly, the present low level of the river would have suspended navigation. River traffic in the Pittsburgh district during the first half of this year was 3.3 per cent less than the 20,193,083 tons hauled in the corresponding period last year. The decline was accounted for almost entirely by the lighter movement of coal over the Monongahela river, Ohio river shipments showing a slight increase for the six months. The movement of steel products was the heaviest in history, totaling $1,166,812 tons, an increase of 6 per cent over the 1929 half-year tonnage, and exceeding the traffic for any year prior to 1927.

Drift Is To West But Pennsylvania Still Leads

The westward drift in steel production has continued its steady pace, recent figures of the American Iron and Steel institute indicating that Indiana and Illinois increased their ingot capacity 21.7 per cent from 1925 to 1929 while Pennsylvania added 4.6 per cent. The combined capacities of Illinois and Indiana of 13,185,360 tons, however, still represents a minor portion of the total capacity of the country of 62,265,670 tons and remains well below Pennsylvania's capacity of 22,943,276 tons.

Considerable attention has been directed to the steel market of the Middle West as well as its steel mills in recent years. Some of the evidence given in the Bethlehem-Youngstown merger case tended to indicate that eastern mills are becoming pinched as the result of the rising importance of Chicago and Detroit as steel producing centers. It is pointed out, however, that developments in steel production methods assume an equal rank so far as the major trends in steel making and distribution are concerned. New processes in the making of pipe and sheets are outstanding among these developments and Pittsburgh producers have concentrated their attention recently more upon this phase of production than upon any large expansion in capacity. A steady growth in the latter may be expected to accompany the normal gain in steel consumption of the eastern area just as Mid-Western steel output has risen with its industrial expansion.

Low production costs still stand as one of the strong supports to Pittsburgh's position in the steel industry despite the advantage lost through the practical collapse of the beehive coke trade for steelmaking purposes during the past ten years. The decline in beehive coke production has been intensified this year by the poor activity in the steel industry, recent output being the lowest since 1922 while the total for the year will be the smallest on record, probably around 1,250,000 tons compared with 20,511,092 tons in 1920 and 35,464,224 in 1916. Coke ovens operations of steelworks' interest are confined to 400 of Monessen Coal & Coke Co., Pittsburgh Steel Co. subsidiary.

Manganese Imports Soar With Russia Chief Source

United States imported 370,903 tons of manganese ore, representing an actual manganese content of 178,389 tons, during the first six months of 1930. Imports of manganese ore, with the exception of the first half of 1926, were larger than for any half year on record, according to the minerals division, department of commerce.

During the six-month period ended June 30, 1929, 342,959 tons, with an actual manganese content of 165,602 tons, was imported, at a time when operations of the steel industry, then operating near capacity, were considerably higher than at present. The current year's increase in the face of a stagnant world manganese market, is understood to be in fulfillment of contracts made last year.

Russia, Brazil, Gold Coast and India were our chief sources of supply, furnishing 98 per cent of our commitments. Russia held the largest share with 47 per cent. Russia has again reached the position of the world's leading producer and exporter of manganese ore and during the fiscal year ended Sept. 30, 1929, set a new post-war production mark of 1,256,788 tons.

Notwithstanding the Russian competition and her internal economic disturbances, Brazil's contribution to the United States' imports amounted to about 30 per cent of the total.

EDITORIAL

Do Not Give Ammunition to Agitators and Cranks!

AS STAGNANT water is conducive to the breeding of mosquitoes, so is inactive business productive of criticism and discontent. When everybody is busy, there is little talk of what ought to be. But when times are hard and when minds are free to dwell upon the hardships of life, bitterness develops and men speak out against the real or imagined injustice of their plight.

With depression so widely distributed throughout the world, it is not surprising that dissension has developed in many sections. The wonder is that more violent demonstrations have not occurred. Except for a consistent flare-up in China and sporadic outbursts of feeble strength in Europe and the United States, which may be attributed to the influence of Red agitators, practically all of the class trouble of the world is confined to local, independent action. If it is true that the soviets are determined to force communism on all of the peoples of the world, they have bungled the present opportunity miserably, or—and this is probably nearer the truth—the masses of the world have developed stronger national bonds and instincts than is realized by most of us.

Employers Responsible To Community

But the ability of suffering humanity to thrust aside the sugared promises of agitators should not blind leaders of industry to their obligations to society in times of business depression. In the United States, where we have established a higher standard of living, it is especially important that those who are looked to for guidance should be careful not to provide ammunition for class discord.

For instance, is it not poor judgment to inflame the hatred of workers, after their return to work after a long lay-off, by "readjusting" or otherwise manipulating piecework rates so that in reality wages are reduced? Is it good business to use the recent period of idleness as an excuse for depriving workers of their records of continuous service so that they may be re-employed at a lower wage rate or their accumulated period of consecutive employment interrupted to reduce their claims for pension funds? Is it in good taste for the owner of a business to buy an expensive yacht, build a palatial home or otherwise parade his extensive fortune when at the same time hundreds of his idle employes are walking the streets?

Only a few executives are guilty of such acts during the present depression. The great majority of them recognize their responsibility and are conducting themselves accordingly. Many of them are taking special pains to give practical consideration to the troubles of their employes. Most of them are refraining from wage cutting in any form.

But the ill-timed and perhaps thoughtless conduct of the minority helps the professional agitators almost as much as if everybody in industry were guilty of stirring up trouble. A single incident of ruthless treatment of workers is transformed by malicious cranks into stories of general persecution by "capital," meaning employers.

How Reds Exaggerate Shop Conditions

If the truth of the last statement is questioned, we recommend that you read several issues of the *Daily Worker,* styled the "central organ of the Communist party, U. S. A. (section of Communist International.") We suggest that you note particularly the communications under "Letters from the Shops." Here you will find letters purporting to reveal terrible conditions existing in certain plants—perhaps one of them yours. These letters will show the extent to which a minor, thoughtlessly committed act can be magnified into a fearfully exaggerated picture of oppression, injustice and brutality.

Thus far the efforts of paid agitators, volunteer cranks and others have not been conspicuously effective. The rank and file of American workmen has been reassuringly apathetic to the propaganda of trouble-makers. Nevertheless, good business judgment seems to demand that employers do something to offset the poisonous words of the enemies of our social and economic standards.

A frank statement to workers, explaining in simple language why times are bad would go a long way in counteracting the misleading statements of agitators. Absolute fairness in dealing with unfortunate employes will go even further.

Now is the time to exercise those qualities of considerate leadership which in the eyes of the public stamp an employer as a "square shooter" and his company a credit to the community. This kind of a reputation is priceless, and cannot be won by those who are indifferent to conditions in the towns in which they operate.

Consumers' Credit and Its Relation To American Prosperity

By H. L. BRAHAM

President, H. L. Braham & Co.

IN THIS present period of business depression, when numerous observers have been seeking explanations for the curtailment of mass buying by ultimate consumers, it is not surprising that occasionally the blame has been placed on instalment selling. It is easy to say that the public is so heavily committed to instalment payments on goods purchased months ago that it has had to call a halt on current purchases. But is this the fact?

STEEL *presents the accompanying view from one who is convinced that instalment selling is responsible for mass production and for many other assets of our modern economic structure. The author is the president of H. L. Braham & Co., automobile financing, Cleveland. The article is abstracted from an address, "Consumers' Credit in America and Its Relation To Present and Future Prosperity," presented at a round table discussion before the Institute of Public Affairs, University of Virginia.*

The key of Mr. Braham's remarks is found in his statement that if the purchase power of those worthy of buying on the deferred payment plan were removed, consumption of various commodities would be reduced by "fully 50 per cent."

THE EDITORS.

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PICTURE for a moment the average American city of 15 years ago. How many families had automobiles? How many had talking machines? Few homes boasted electricity, except in the large cities and even in them the electric sewing machine, vacuum cleaner, washing machines and other labor saving devices that now are considered necessities were looked upon as luxuries available only to the few. Millions of homes now have them in addition to the automobile. Tractors and labor saving devices for the farmer were unknown. The fact that a home without some labor saving device now is a rarity is a timely example of what has been made possible by the extension of consumers' credit.

Starting approximately in 1919, average common labor was being paid from one to two dollars per day, while in 1919 and 1920, wages went up by leaps and bounds and common labor was earning a minimum of $5.00 per day. Naturally skilled labor went up in proportion. The foundation was laid for the masses to purchase the better comforts of life, principally because they were able to make these purchases on the deferred payment plan. It provided the opportunity for the masses to do that which had become common to the chosen few.

The question now arises: "Is instalment selling a benefit or is it a detriment to the economic structure of our country? Is it an asset or a liability to the masses of workers who participate in it?"

94 Per Cent of Instalment Purchases Involve Little Collection Effort

Approximately 94 per cent of all purchases of legitimate merchandise, sold by legitimate companies, the paper of which is purchased by the properly organized finance companies, is paid for with but slight collection effort. Billions of dollars previously carried as open book accounts by merchants have exchanged places and these accounts are now secured by mortgages against the purchases. The customer has his payments divided into equal monthly instalments and as a consequence, he recognizes his obligation and prepares himself to meet it on the due dates.

This means that the retailer can devote more time to sales because of the lessening of collection effort and his business being done on a cash basis because of receiving the full amount of his sale price from the finance company, making his business just that much more liquid for promotion. It means a quicker turnover of merchandise, less investment in inventory and in general, better business. In the meantime the consumer is the beneficiary in that he has been able to buy some necessity or luxury which otherwise would not have been possible, the use and enjoyment of which has increased his happiness and raised his standard of living.

Because of the ability of the masses to purchase automobiles on the deferred payment plan, a vista for better homes was opened up, doing away with tenement districts. With the problem of transportation solved by ownership of an automobile, the wage earner could live farther from the factory or shop, and by reason

of instalment selling, he could purchase a home in the suburbs on the deferred payment plan. Realize what benefits have accrued to the man and his family in the way of a better neighborhood for his children, fresh air, the ability to get beyond his door step for recreation! This could do no less than instill ambition and the desire to maintain what he has and work toward still greater comforts. As opportunity permitted, he has added a radio from which he receives both entertainment and education. Culture came into the home. Music was analyzed and became better understood; the best thoughts of the brilliant minds of the world were brought to the home. The farmer now is kept in touch with market quotations as they relate to his farm products. We must admit, the radio has been of inestimable value to our civilization and made possible in every home by instalment selling. The household burdens of his family were reduced by the installation of washing machines, iceless refrigerators, vacuum cleaners, sewing machines, victrolas, etc.

16 Per Cent of All Applications for Consumer Credit Are Rejected

Finance companies and their activities are but little understood by the average layman. Everyone does not get credit who might choose to ask for it. An average of 16 per cent of all applicants are rejected. Properly organized finance companies cause a lengthy and careful investigation to be made of every applicant. He signs a purchaser's statement, attesting to the permanency of his occupation, the amount of his monthly income, the number of dependents, his past credit record, the moral hazard, the amount paid in cash and balance due to show the proper equity in the collateral. The applicant must first prove his right to ownership before the sale is approved.

Modern machinery has reduced requirements for man power, and particularly so in regard to common labor. One man today is doing the work of seven, so we are naturally concerned as to what happened to the other six. What happened to this army of unemployed? Fortunately, the cycle was gradual, allowing for readjustments and I believe it is self apparent that instalment selling was responsible for the greater part of his readjustment. As these labor saving devices came into use, each man that worked upon them, became a specialist and as such earned an average of approximately three times his former wage. When we consider the working costs of operation saved by the automatic machine, and the differential between the wages paid to the operators, we find that costs of manufacture of the finished product have been reduced proportionately.

As the purchase power of these specialists was established, their buying power became immediately apparent, and with the aid of the deferred payment plan, it brought about greater production. The cycle continued. The increased production provided more employment, demanded more raw material, fabrication, accessories and finished products.

This stimulated growth of commerce of recent years, actually started at a time when the wage scale became advanced about 1919, and each year from that exaggerated the volume of instalment purchases to the point where the analysts of our country decided to probe into it. It was found that instead of unemployment being prevalent because of modern inventions of labor saving devices, this vast army either became specialists in machine operations or found employment because of mass production, fostered by instalment selling.

Abandonment of Deferred Purchase Plan Would Cut Consumption 50 Per Cent

Should we take away the purchase power of those worthy of purchasing on the deferred payment plan, I believe consumption of these various items would be reduced by fully 50 per cent.

We need not elaborate on the crisis it would create should that which has been accepted as a boon and a privilege by the masses be stopped. Serious unemployment would be an outgrowth in the exact relation of this reduced purchase power. Wages would be lowered by the law of supply and demand, farm prices would be lowered for the same reason, with no apparent benefit other than the fallacy that savings accounts would grow, and this, to my mind is doubtful, because earning power would be curtailed.

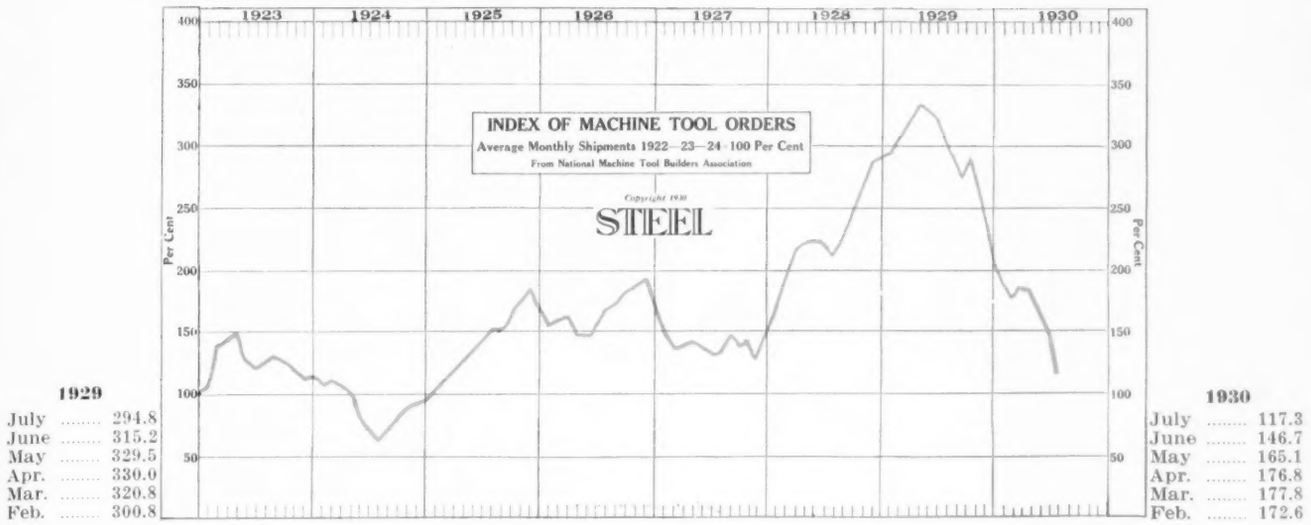
Quantity production, due to instalment selling, has made possible price reduction and greatly increased the dollar value, and even with the instalment charge, the purchaser can buy any commodity today in quantity production, cheaper because of it.

This instalment charge will be materially reduced when the day arrives that the Federal Reserve banks will recognize the soundness of this class of collateral, and accept it for rediscount. This would create a saving in interest rates and overhead expense, in the time now taken up by sound finance companies in procuring adequate bank loans.

Installment Selling Is Vital to Modern Economic Structure

It is my opinion that a cessation of instalment selling would bring about a sudden termination of the cycle I have outlined. Higher prices of such merchandise as is sold on the deferred payment plan would be an inevitable result. There would be an end to quantity production, with a resulting tremendous decrease in labor requirements and the farmer, the wage earner, and the masses in general would be deprived of the privileges of today. It would bring a breakdown from our present social and business position and cause a serious setback to our social and economic structure.

THE BUSINESS TREND



Pace of Business Recovery Is Painfully Slow

BUSINESS now is at that painful stage where the changes from week to week are so imperceptible that the layman cannot determine whether conditions are improving or getting worse. A number of competent observers declare that business has turned the corner. Some of them say that the low point was reached in July.

Probably these views are correct, but the improvement in August has been so slight that it is not impressive. When thousands of workers returned to their jobs on August 4, it was thought that orders for materials would be forthcoming promptly. Thus far buying resulting from increased industrial activity has been almost negligible.

In July the index for machine tool orders conveyed a hint that bookings in August might turn upward. Any hope that was inspired by the July figures has been rudely shattered by the August index, which dropped sharply to 117.3, which is the lowest figure since March, 1925. Cancellations in July were heavier than in June, but still not above what may be considered normal.

Now Is Poor Time To Rely on Short-Time Trends

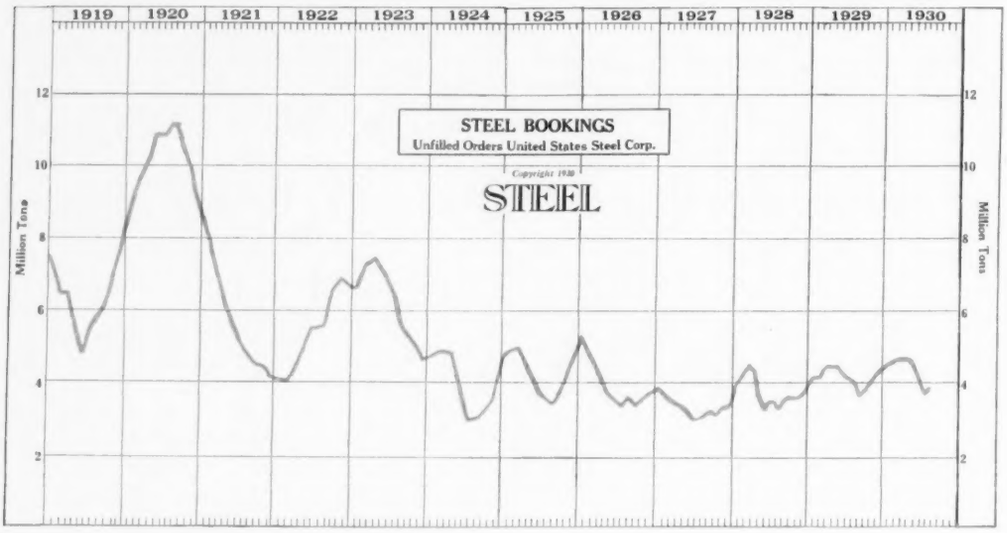
This experience in machine tool orders perhaps is typical of what may be expected of many other business indicators. In other words, we are going through a period when the week-to-week or month-to-month records are not consistent. Under such conditions it is dangerous to build hopes on short-time gains or to feel too discouraged over momentary losses. Until recovery assumes tangible proportions, the ups will be interspersed with the downs—much to the confusion of those who cannot view business barometers from a broad perspective.

Price trends will bear close scrutiny during the next few months. Two of the many indices of commodity prices recently have turned upward. It is difficult to interpret this change intelligently because the influence of the drought—an unforeseen factor—apparently has complicated the situation. However, the tendency of prices of commodities farthest removed from the influence of agriculture is changing.

Gain in Industrial Building Awards Is Welcome Surprise

Other indicators yield confusing evidence. As expected, June earnings of Class I railroads were lower. July imports and exports dropped to the lowest levels since 1922. Building awards, as compiled by the F. W. Dodge Corp., showed a moderate decline from June figures. The awards for residential construction dropped rather sharply, but those for industrial construction registered a gain of 22 per cent. Aside from the encouraging volume of public work, this rise in industrial building activity is the first bright spot in the building situation for months.

Rain through many sections of the parched states has reduced the severity of the drought somewhat. Real suffering has occurred, but in general the effect of the dry spell probably has been exaggerated. However, it already has retarded business recovery. Many leaders, almost ready to resume activity, now are waiting to see what the effect of the drought will be.



1930	Tons
July	4,022,055
June	3,968,064
May	4,059,227
1929	
July	4,088,177
June	4,256,910
May	4,304,167

Bookings by U.S. Steel on July 31 Show Small Gain

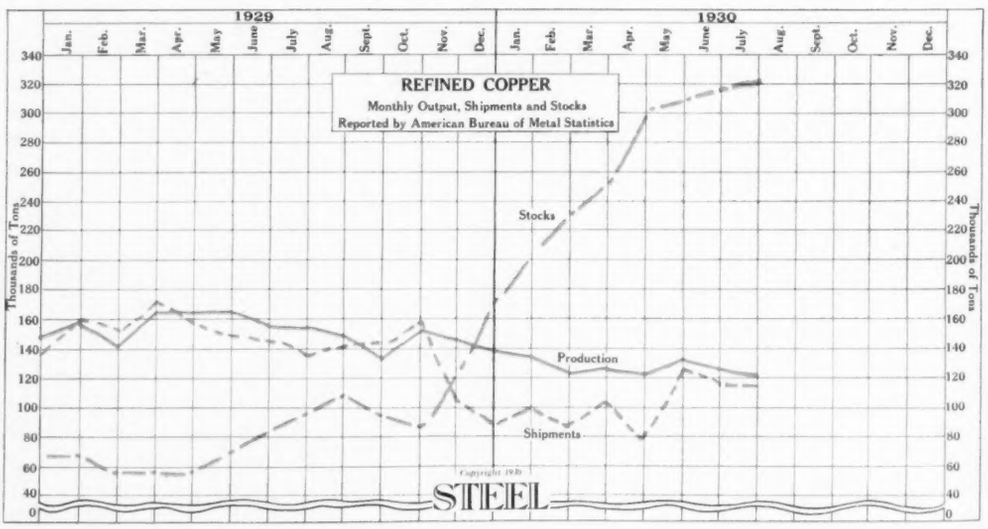
Unfilled orders of the United States Steel Corp. increased for the first time since last March. The increase of 53,991 tons or 1.3 per cent, while not large, represents a welcome rise. At the end of July, unfilled orders on the corporation's books stood at 4,022,055 tons as compared to 3,968,064 tons in June and 4,088,177 tons for the corresponding period one year ago. This increase did not come as a total surprise. Since the attitude of the Steel Corp. has been to retain a substantial backlog of unfilled orders, the curtailed rate of operations indicates that orders were accumulating rather than being worked off. Large pipe and structural orders still continue to furnish the largest part of new business.

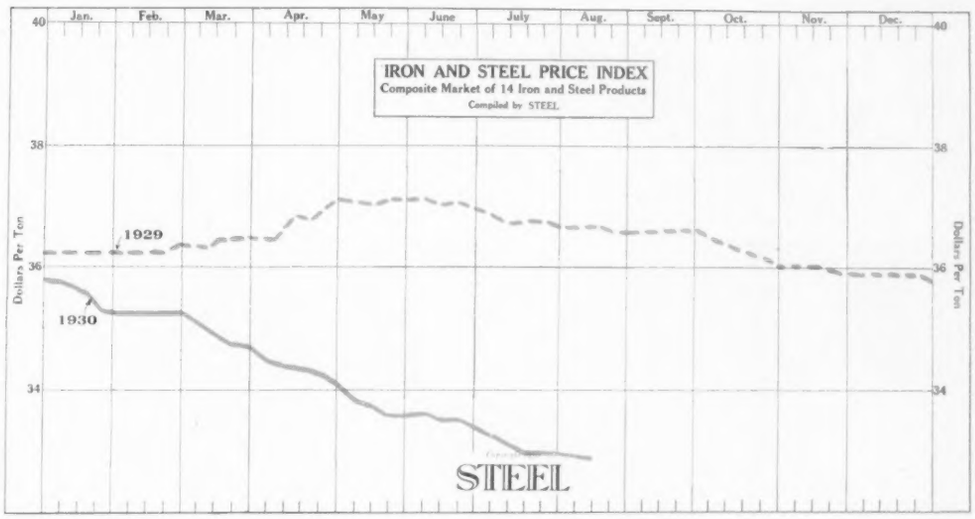
Refined Copper Stocks Have Slight Advance in July

Total stocks of refined copper on hand in North and South America advanced to the high record of 322,639 tons during July. The increase for the month, however, was slight, amounting to only 5877 tons over June's total. While refined copper stocks rose in July, total stocks declined 6345 tons during the month due to a reduction of blister stocks, so that generally the July report was considered favorable.

July production of refined copper totaled 123,179 tons as compared to 124,821 tons for June. Shipments, on the other hand, increased from 116,705 tons to 117,902 tons, though still approximately 400 tons less than production. Because production continued to exceed shipments, stocks rose for the month.

Stocks	
July, 1930	322,639
June, 1930	316,762
July, 1929	97,729
Production	
July, 1930	123,179
June, 1930	124,821
July, 1929	153,513
Shipments	
July, 1930	117,902
June, 1930	116,705
July, 1929	138,924





Weekly Figures

August 13	$33.00
August 6	33.08
July 30	33.09
July 23	33.14

Monthly Averages

July, 1930	$33.21
June, 1930	33.53
May, 1930	33.73
July, 1929	36.71

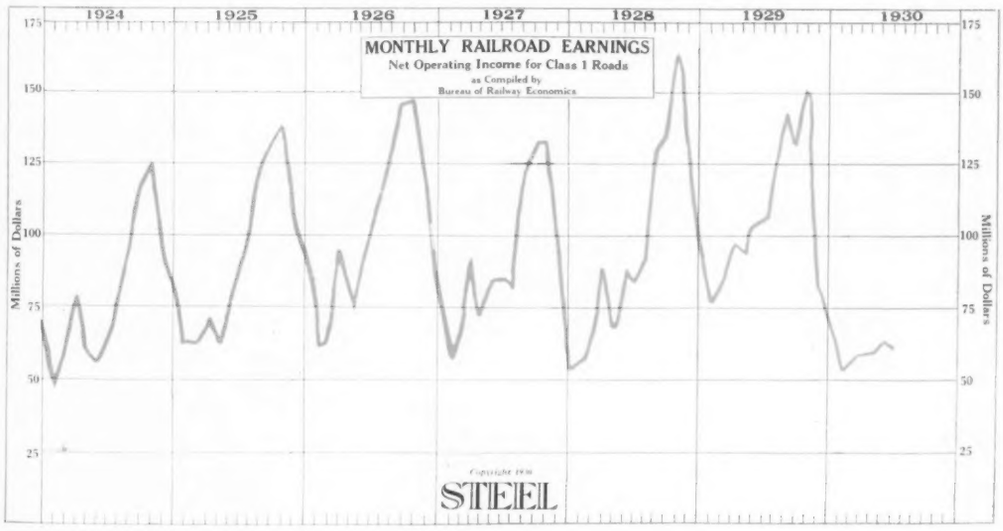
Composite of Steel and Iron Prices Lower in mid-August

STEEL's composite of 14 iron and steel quotations for the week ending August 13 declined 8 cents from the previous week to $33.00. Uneasiness and uncertainty concerning business activity has had a weakening effect upon price structures. Buyers are still refusing to make new commitments until they are assured of a market for their products. As a result of the drought and its estimated effect upon rural purchasing power, further weakness developed in sheet and nails, both of which are widely used by farmers and in the manufacture of farm necessities. Falling prices, however, are meeting more and more resistance, and it is quite probable that prices will turn stronger in the next month with the impetus of seasonal buying.

Earnings of Class I Railroads for June Still Far Below 1929 Figures

Earnings of 172 Class I railroads, as compiled by the bureau of railway economics, in June declined less than one per cent from the previous month's level. Net operating income for June totaled $68,881,473 as compared with $69,173,825 for May and $105,817,808 for June, 1929. While the decline from May was only slight, comparison with June, 1929, shows that a 35 per cent drop has occurred in railroad earnings which has reduced the rate of return on property investment from 5.27 per cent in June, 1929, to 3.55 per cent in June, 1930.

For the first six months of 1930 net operating income totaled $376,428,836 which was at the annual rate of 3.61 per cent on the road's property investment compared with $562,729,734 or 5.52 per cent for the same period of 1929.



June	68,881,473
May	69,173,825
April	62,271,584

1929

June	105,817,808
May	103,577,561
April	94,204,113

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THIS CHART SHOWS THE STATION-TO-STATION DAY RATES BETWEEN REPRESENTATIVE CITIES

	Atlanta, Ga.	Boston, Mass.	Chicago, Ill.	Cincinnati, Ohio	Cleveland, Ohio	Denver, Colo.	Detroit, Mich.	Indianapolis, Ind.	Milwaukee, Wis.	Newark, N. J.	New Haven, Conn.	New York, N. Y.	Omaha, Neb.	Philadelphia, Pa.	San Francisco, Cal.	St. Louis, Mo.	Washington, D.C.
Atlanta, Ga.		3.50	2.35	1.65	2.15	4.50	2.35	1.75	2.55	2.75	3.25	3.00	3.00	2.55	7.75	1.95	2.35
Boston, Mass.	3.50		3.25	3.00	2.35	6.50	2.55	3.00	3.25	1.05	.70	1.00	4.50	1.25	9.50	3.75	1.65
Chicago, Ill.	2.35	3.25		1.20	1.45	3.50	1.15	.90	.50	2.75	3.00	3.00	1.80	2.55	6.75	1.25	2.55
Cincinnati, Ohio	1.65	3.00	1.20		1.25	4.00	1.15	.60	1.50	2.35	2.55	2.35	2.55	2.15	7.25	1.45	1.80
Cleveland, Ohio	2.15	2.35	1.45	1.25		4.50	.60	1.25	1.65	1.70	1.95	1.80	3.00	1.60	7.75	2.05	1.45
Denver, Colo.	4.50	6.50	3.50	4.00	4.50		4.25	3.75	3.50	6.00	6.25	6.00	2.05	5.75	3.75	3.25	5.50
Detroit, Mich.	2.35	2.55	1.15	1.15	.60	4.25		1.15	1.25	1.95	2.15	2.05	2.75	1.85	7.50	1.95	1.70
Indianapolis, Ind.	1.75	3.00	.90	.60	1.25	3.75	1.15		1.20	2.55	2.75	2.55	2.15	2.35	7.00	1.10	2.05
Milwaukee, Wis.	2.55	3.25	.50	1.50	1.65	3.50	1.25	1.20		3.00	3.00	3.00	1.75	2.75	6.75	1.50	2.55
Newark, N. J.	2.75	1.05	2.75	2.35	1.70	6.00	1.95	2.55	3.00		.50	.15	4.00	.50	9.00	3.25	1.00
New Haven, Conn.	3.25	.70	3.00	2.55	1.95	6.25	2.15	2.75	3.00	.50		.50	4.25	.80	9.25	3.50	1.30
New York, N. Y.	3.00	1.00	3.00	2.35	1.80	6.00	2.05	2.55	3.00	.15	.50		4.25	.50	9.00	3.25	1.05
Omaha, Neb.	3.00	4.50	1.80	2.55	3.00	2.05	2.75	2.15	1.75	4.00	4.25	4.25		4.00	5.25	1.65	3.75
Philadelphia, Pa.	2.55	1.25	2.55	2.15	1.60	5.75	1.85	2.35	2.75	.50	.80	.50	4.00		8.75	3.00	.75
San Francisco, Cal.	7.75	9.50	6.75	7.25	7.75	3.75	7.50	7.00	6.75	9.00	9.25	9.00	5.25	8.75		6.50	8.50
St. Louis, Mo.	1.95	3.75	1.25	1.45	2.05	3.25	1.95	1.10	1.50	3.25	3.50	3.25	1.65	3.00	6.50		2.75
Washington, D.C.	2.35	1.65	2.55	1.80	1.45	5.50	1.70	2.05	2.55	1.00	1.30	1.05	3.75	.75	8.50	2.75	

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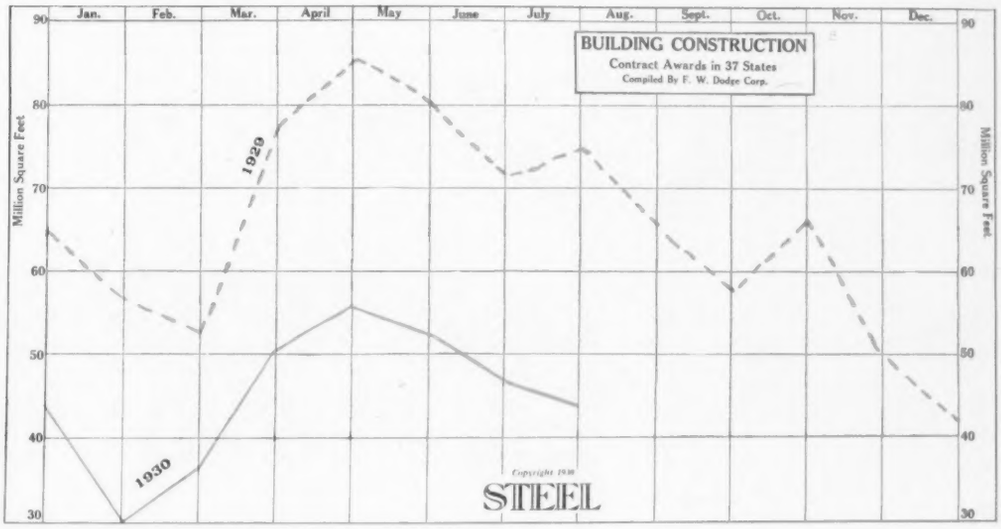


Square Feet	
July, 1930	44,604,200
June, 1930	48,214,200
July, 1929	75,463,700

Total Construction Awards Off in July, But Industrial Awards Rise

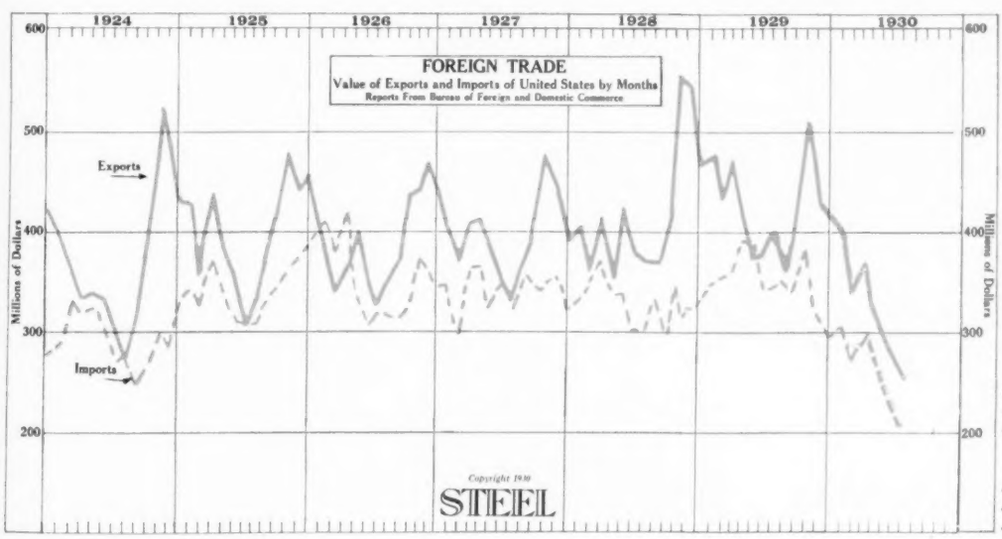
Construction awards for July, as reported by the F. W. Dodge Corp. declined for the third consecutive month. From 48,214,200 square feet in June, total awards have dropped to 44,-604,200 square feet in July. While this represents a reduction of about 7 per cent, total awards are approximately 41 per cent below the corresponding month of 1929. This compares with a 10 per cent decline in June which carried total awards to about 34 per cent below 1929 figures.

While total awards declined during the month, further analysis shows that although residential awards fell from 20,781,700 to 18,231,300 square feet, industrial awards rose from 4,358,-600 to 5,300,300 square feet.

Foreign Trade Slumps To Lowest Level Since 1922

Foreign trade of the United States in July slumped to the lowest levels the country has experienced since 1922. According to the figures of the department of commerce, exports for July amounted to $269,000,000, which is the lowest since February, 1922, when exports totaled $250,600,000. Imports likewise shared in the percipitous drop of July foreign trade, dropping to $219,000,000. This is the smallest total since the $217,000,000 level of April, 1922.

Such a sudden slackening of foreign trade is, as generally viewed, primarily due to the present world wide recession. Just how much of this decline is due to the Smoot-Hawley tariff is a matter of opinion, upon which there is as yet little factual data.



Exports	
July, 1930	$269,000,000
June, 1930	299,000,000
July, 1929	402,861,000

Imports	
July, 1930	$219,000,000
June, 1930	250,000,000
July, 1929	352,980,000

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TWO-NINETY-FIVE MADISON AVENUE : NEW YORK

Vanadium alloy steels find wide use in the automobile industry for crankshafts, connecting rods and other highly stressed parts

Vanadium Additions Improve Steel

By N. PETINOT

Assistant to President, Vanadium Corp. of America

STEEL HEREWITH presents to its readers the first of three authentic and comprehensive articles on the development of vanadium-containing steels in the United States, the properties and present application of these steels in major industries. Part I deals principally with the effects of vanadium upon steels; Part II to appear in the Aug. 28 issue of STEEL will consider the properties of vanadium steels and begin a discussion of commercial applications; Part III to appear in the Sept. 4 issue will conclude the applications and set forth the use of vanadium as a process element. These articles are prepared from a paper read before the sixth International Congress of Mining, Metallurgy and Applied Geology in Liege, Belgium, June 22-28. The author, N. Petinot, is assistant to the president, Vanadium Corp. of America, New York.

Part I

THE element vanadium, discovered in 1801 in the lead ores of Mexico by Del Rio and rediscovered in Swedish iron ores in 1830 by Sefstrom, spent the first hundred years of its known existence in comparative obscurity, at least from the commercial viewpoint. This may be ascribed in part to the lack of development of those industries to which the unusual properties of its alloys and compounds are of especial value, but even more largely perhaps to the lack of ore deposits of a size sufficient to supply a reasonable world demand. Prior to the beginning of the twentieth century the uses were small and of a chemical nature and the principal supplies of the metal were secured from the lead ores of Spain, and from slags produced in working the iron ores of Northern France. At about the time of the discovery of the great benefit conferred upon cer-

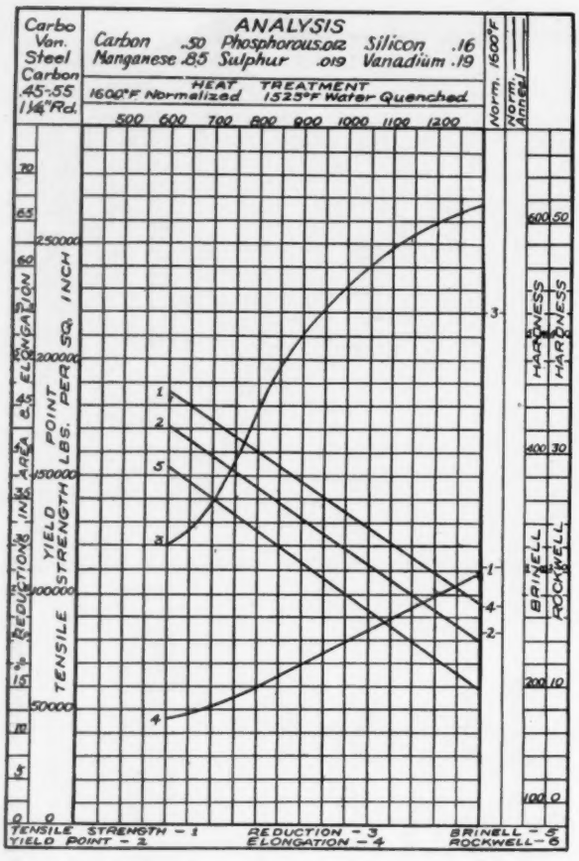


FIG. 1—Chart showing the effect of heat treatment on carbon-vanadium steel

tain constructional steels by the addition of small percentages of vanadium, came also the discovery of the large Peruvian deposits and there was thus made available ample supplies of raw material to permit the full development of these new special steels of unusual properties.

In this development the then-beginning automotive industry was destined to play a most prominent part. Its demand for alloy steels of high unit strength and great resistance to impact, for tool steels that would function under demands far greater than had been imposed previously by other industries, and, when mass production arrived, for steels capable of developing greatly superior degrees of uniformity from melt to melt, not only in mechanical properties but even more in respect to fabricating properties, made vanadium an element of supreme importance in alloy steel production.

Alloys Are Standardized

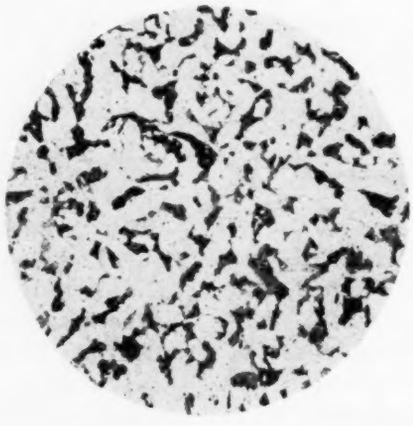
During this period of rapid growth of the industry, the most satisfactory methods of preparing vanadium steels were devised resulting in the standardization of rich alloys for addition of vanadium to molten steel as well as accepted procedures for making these additions. The principal alloy of vanadium is ferrovanadium, which is the medium for adding vanadium to steel. This alloy will range from 30 to 90 per cent vanadium. In the United States the generally used ferrovanadium contains from 35 to 45 per cent. In European countries an alloy containing 45 to 55 per cent is commonly used, and for special purposes an alloy containing 80 to 85 per cent vanadium. Ferrovanadium of 35 to 45 per cent vanadium has a melting point of approximately 2600 to 2700 degrees Fahr. (approximately 1425 to 1480 degrees Cent.), and readily is soluble in molten steel.

Vanadium steels are made by the following methods: Crucible, electric and open hearth, the last two both basic and acid. In crucible steelmaking the ferrovanadium may be either melted down with the charge or added to the molten steel just before teeming. In electric furnace steel practice the ferrovanadium may be added to the furnace any time after the other final additions have been made, or about 15 minutes before tapping, or it may be added to the ladle. In the production of basic open-hearth steel the ferrovanadium always is added to the ladle after the other additions, such as ferrosilicon, have been made, as the losses would be excessive if the alloy were added to the furnace. In acid open-hearth steelmaking the ferrovanadium may be added either in the furnace or in the ladle. If added to the furnace, it should be added just before tapping and after the bath has been deoxidized and the final additions of other alloys made. In the case of ladle additions, time always should be allowed for the ferrovanadium to be incorporated thoroughly before pouring the steel into the molds. The percentage of added vanadium remaining in the steel, that is, the recovery, is 85 to 95 per cent for open-hearth steel, and 95 to 100 per cent for electric furnace and crucible steel.

Imparts Alloying Quality

Vanadium has a special place in the periodic system of elements, because it lies between those elements used as deoxidizing agents and those used as fixed additions and carbide forming. While it can serve both purposes, it is not employed for deoxidizing but is added for its alloying qualities after the deoxidation has been effected by cheaper elements. In the past, considerable emphasis was placed upon its value as a deoxidizer, but modern practice recognizes the poor economies of such methods. It, therefore, is used solely as an alloying addition in imparting fine grain size and greatly improving the strength and other properties of steel.

Steels containing vanadium in appreciable amounts, sometimes even as low as 0.05 per cent, show much



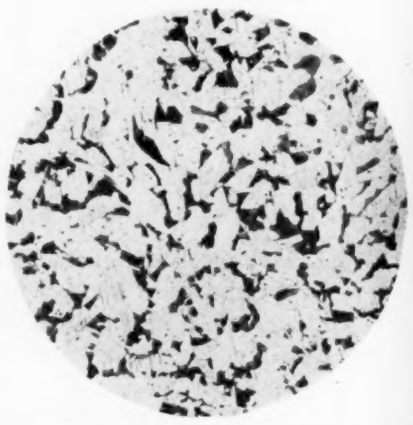


Fig. 2—(Left) Microstructure of 0.20 per cent carbon steel as cast containing 0.14 per cent vanadium. X35. Fig. 3 (Right) Microstructure of 0.20 per cent carbon steel as cast containing 0.37 per cent nickel and 0.05 per cent vanadium. X35

less marked dendritic segregation than do vanadium-free steels, often complete freedom from Widmanstatten patterns after casting and prior to thermal or mechanical treatment, and generally are characterized by extremely fine grain size. They likewise retain this fine grain size at higher temperatures than do vanadium-free steels. This influence of vanadium upon the grain size of steel in comparison with other alloy steels of like carbon content and like tensile strength is clearly shown in Figs. 2 to 5 inclusive. These are all 0.20 per cent carbon alloy steels "as cast" from a small electric furnace into 1¼-inch sections in dry sand. It will be observed that the Widmanstaten pattern of the nickel steel no longer occurs when vanadium is added; similar effects may be produced in other alloy steels.

Table I

S.A.E. Specifications for Chrome-Vanadium Steel

S.A.E. steel No.	Carbon, per cent	Manganese, per cent	Phosphorus per cent maximum	Sulphur, per cent, maximum	Chromium, per cent	Vanadium, per cent minimum	Vanadium, per cent desired
6115	0.10-0.20	0.30-0.60	0.04	0.045	0.80-1.10	0.15	0.18
6120	0.15-0.25	0.30-0.60	0.04	0.045	0.80-1.10	0.15	0.18
6125	0.20-0.30	0.50-0.80	0.04	0.045	0.80-1.10	0.15	0.18
6130	0.25-0.35	0.50-0.80	0.04	0.045	0.80-1.10	0.15	0.18
6135	0.30-0.40	0.50-0.80	0.04	0.045	0.80-1.10	0.15	0.18
6140	0.35-0.45	0.50-0.80	0.04	0.045	0.80-1.10	0.15	0.18
6145	0.40-0.50	0.50-0.80	0.04	0.045	0.80-1.10	0.15	0.18
6150	0.45-0.55	0.50-0.80	0.04	0.045	0.80-1.10	0.15	0.18
6195	0.90-1.05	0.20-0.45	0.03	0.035	0.80-1.10	0.15	0.18

Has Affinity for Carbon

Vanadium has a strong affinity for carbon and, when added to steel, is found combined partly with the ferrite but principally with the carbide or cementite. The ferrite is stronger, tougher and harder than ordinary ferrite. The carbide likewise is strengthened and hardened greatly and shows a much less tendency to coalesce or form into large masses. It tends to remain in the sorbitic condition and therefore segregation of carbides is less common in vanadium steels, and lamellar or divorced pearlite do not occur readily at ordinary rates of cooling. Vanadium imparts thermal stability to steels by hindering the growth of carbide particles and by restraining the decomposition of the carbides at elevated temperatures. The characteristic fine grain of these steels also may be a contributing factor. As a result, vanadium structural steels serve well at elevated temperatures. The addition of vanadium to tool steels, and in particular to high-speed steels, greatly improves their life, especially under conditions involving high temperature of the cutting edges.

The great benefits of these various effects of vanadium on steel immediately are apparent in improved physical properties and uniformity of response to heat treatment. The tensile strength is increased and the elastic ratio raised without materially lowering the ductility. The resistance to shock or impact, reversal of stresses or fatigue, and resistance to wear or abrasion, are increased considerably.

Although the greater number of structural vanadium steels are quaternary or more complex combinations, a considerable tonnage of carbon-vanadium ternary steel is consumed by the railroad and automotive industries. The principal steel of this type has the following compositions:

Element	Per cent
Carbon	0.45 to 0.55
Manganese	0.70 to 0.95
Phosphorus, maximum	0.045
Sulphur, maximum	0.05
Vanadium, minimum	0.18

Forgings of this steel usually are normalized and annealed.

For large forgings of carbon-vanadium steel the following heat treatment is general:

Normalizing: Heat to 1600 to 1650 degrees Fahr. (870 to 900 degrees Cent.) and cool in still air.

Tempering: Reheat to 1100 to 1200 degrees Fahr. (590 to 650 degress Cent.).

For large forgings up to 14 inches diameter, the following minimum physical properties are specified:

Yield point, lbs. sq. in.	60,000
Tensile strength, lbs. sq. in.	90,000
Elongation in 2", per cent	20
Reduction of area, per cent	40

Typical physical properties obtained are:

Yield point, lbs. sq. in.	65,000
Tensile strength, lbs. sq. in.	97,000
Elongation in 2", per cent	24
Reduction of area, per cent	48

Smaller forgings with this same heat treatment result of course in higher strength properties, results being of the following order:

Yield point, lbs. sq. in.	75,000
Tensile strength, lbs. sq. in.	105,000
Elongation in 2", per cent	28
Reduction of area, per cent	60

Responds to Tempering

This steel like all vanadium steels responds well to quenching and tempering and has been used for forging dies, large piston rods, shafting, etc. Quenched and tempered from 1000 to 1200 degrees Fahr. (540 to 650 degrees Cent.) the physical properties obtainable from forgings of over 5 inches section, depending upon the temperature, actual analysis, and size, are:

Yield point, lbs. sq. in.	75,000 to 100,000
Tensile strength, lbs. sq. in.	110,000 to 130,000
Elongation in 2", per cent	over 20
Reduction of area, per cent	over 48

Typical values on quenched and tempered small sections of this carbon-vanadium steel appear in Fig. 1.

Carbon-vanadium steel castings con-

(*Concluded on Page* 48)

Fig. 4—(Left) Microstructure of 0.20 per cent carbon steel as cast containing 0.62 per cent nickel. X35. Fig. 5 (Right) Microstructure of 0.20 per cent carbon steel as cast containing 0.29 per cent molybdenum. X35

The psychological effect of the award of this sign to a department is a great booster for cleanup activities

Adoption of Safety Program Cuts Lost-Time Accidents

BY EDWARD SALT

THOROUGH study of plant accidents, installation of safety devices on all machines and the enlistment of every employe in a safety program, eliminated 532 lost-time accidents at the Transue & Williams Steel Forging Corp., Alliance, O., last year. Medical expenses were reduced $4,784.33 and nearly seven and a quarter years or 2639 days of lost time due to accidents was saved.

These accomplishments were in face of a larger plant force and more man-hours compared with 1927, the last full year before the safety program was adopted. There were 823 employes in 1927 compared with 955 last year, representing 2,139,000 man-hours in 1927 compared with 2,292,000 in 1929.

Sharp Reduction in Accidents

Concerned over the 1927 record of mishaps, E. G. Stahl, manager of personnel, outlined a safety program which was endorsed by J. R. Gorman, then vice president and general manager, and now the company president. The report for 1927 showed 581 lost-time accidents among the 823 employes, with a total of 3486 days' time lost and a cost of $5,329.33 for medical expenses alone. Last year, the first full year under the safety program, there were only 49 lost-time accidents, with a total of 847 days' time lost and at a medical expense of only $545.

No Immediate Improvement

Launching the safety program, a survey of all accidents in the plant for the previous four years was started early in 1928, data being accumulated for a period of nine months. No immediate results from the survey were noticed; in fact, during the first six months of 1928, 328 accidents occurred, an increase of 56 over the same period in 1927. Four of these six months showed an increase over the corresponding months the year previous. However, during the last half of 1928, only 46 accidents occurred, compared with 309 for the same period in 1927. Two of these six months had only one accident each. For the entire year a reduction from 1927 of more than 211 accidents was effected. Last year there were two no-accident months. The largest number for any month was 23, or nearly half the year's total. In the first six months of 1930, there have been only 11 accidents. The chart on page 47 is a graphic presentation of the company's accident record over the period of the last 42 months or 3½ years, and illustrates strikingly the sharp reduction in lost-time accidents effected by the inauguration of the safety program.

The survey showed three main sources of accidents; most occurred in the trimming room, next in line being the eye accidents and third, accidents due to stumbling. The safety program was divided into three phases—the elimination of hazards, the education and enlisting of all employes, and finally the follow-up to make certain that the campaign would not lose its effectiveness.

Repairs Are Undertaken

Elimination of hazards was undertaken by company officials before employes were enlisted in the safety program. Floors of the plant were cemented or bricked. Uneven bricks in the yard were removed, and new bricks laid, eliminating many stumbling spots. Machines were moved to give better lighting. In the trimming room, where machines in the past had been placed with no regard to lighting or order, presses were rearranged in two rows and placed on wooden platforms so tote boxes could be moved closer to them, as shown in an accompanying illustration. The lighting system was changed to give better illumination for night operators. Wheelbarrows which had been the cause of numerous accidents were eliminated not only for safety, but also for efficiency, being replaced by electric trucks. Traffic lanes were painted on the floor to eliminate collisions and each truck driver was made a member of the safety committee.

Heating and sanitation systems were revamped. The basement under the maintenance machine room was transformed into a modern washroom with shower baths and lockers, replacing small wash benches which previously existed in various parts of the shop. The first aid station was replaced by a modern hospital where nearly all accident cases are handled. A doctor and two nurses were placed on the medical staff. An important step in the revamping program was equipping all machines with guards, many types of which were tested before final installation was made.

At the completion of the survey, when the safety program was inaugurated in October, 1928, two general orders were issued. One required that every press operator wear wristlets attached to a cable

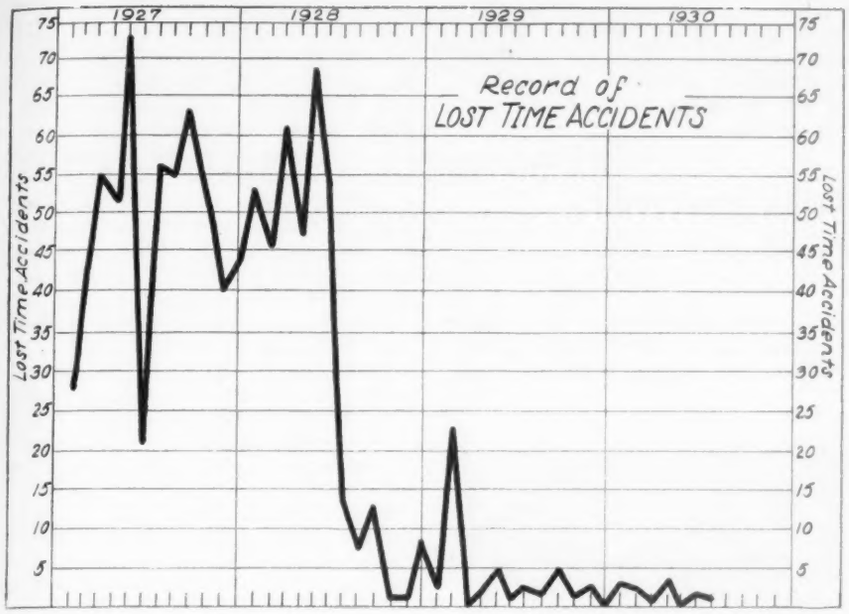


Chart illustrating the sharp reduction in lost-time accidents accomplished by the establishment of a comprehensive safety movement

which automatically pulls the employe's hands to safety when the press is released. The other required that all persons including employes, officials and visitors wear glasses while in the plant.

Some opposition to these orders was met, especially the order requiring the uses of glasses. However, 26 pairs of shattered goggles are mute testimony to the merit of this order. Twelve hundred and fifty pairs of glasses were purchased by the company. For the employe who wore glasses to correct an eye trouble, special lenses were ordered, conforming to the prescription for the employe's regular glasses. The men were assessed $5 for these, the company paying the rest of the cost. Exactly $2000 was spent to protect the eyes of the employes and $5250 for safety cables to protect the hands of press operators.

Educational Phase Stressed

The program then shifted to the educational phase and the enlistment of all employes in co-operating. In each of the 25 departments, a departmental safety committee composed of the foreman and two employes was named. Monthly meetings during regular working hours are held by these committees in addition to a monthly meeting of the general safety committee which is composed of all departmental committees.

Fifteen bulletin boards were erected in the plant on which safety posters from the National Safety council were posted. From time to time shattered glasses and brief stories of near accidents, are tacked to the boards. Ten boxes were placed in various parts of the plant, in which employes were asked to drop suggestions for the elimination of accident hazards. Awards of $1, $3 and $10 were offered, depending on the value of the suggestion. Many such awards have been paid.

When an accident occurs, the safety committee of that department must make an investigation and the foreman must file a complete report in duplicate with the manager of personnel and the superintendent of maintenance. This investigation is in addition to an investigation made by these officials personally. In his report, the foreman must tell what steps have been taken to prevent the recurrence of a similar mishap.

Three follow-up committees are active, one on clean-up, one on rehabilitation and the third on suggestion. The clean-up committee works by psychology with the aid of a 5-foot sign, shown in an accompanying illustration, bearing the statement "*This was the dirtiest department in the shop last month.*"

No one knows when the committee will make its rounds, not even the committee members, the superintendent of maintenance selecting the day and notifying the committee to make a tour. Each department is graded on the demerit system, the department having the lowest score being awarded the sign for a month.

Effect Is Pronounced

The maintenance department was the first to be awarded the sign. Material had been lying on the floor and it was almost impossible to go through the department without stumbling over something. Then the storm broke with men in the maintenance department protesting strenuously, claiming they had received no warning and had not been given an opportunity to cleanup. Foremen of other departments sent their men to the maintenance department to see the sign. When the protests of the maintenance men were ignored, they demanded paint, lumber, hardware and other incidentals for repairs, and within a few days, this was one of the cleanest departments in the shop.

No department has received the sign twice, and none of those which has received it, wants it again. Peculiarly enough, a recent award of the sign was to the department in which one of the committee members worked. The effect of this sign has been much better than was expected. Employes spend their spare time

Electric trucks travel in painted traffic lanes as a part of the program to eliminate hazards in material handling

painting machines and cleaning up to prevent being "disgraced" by the caustic sign.

The rehabilitation committee confers with employes who have been permanently injured and arranges to provide a good job in the plant for them. However, since the safety program was inaugurated, this committee finds little work facing it.

The suggestion committee considers all suggestions made by employes. If they seem valuable, the committee passes them on to company officials, recommending the award to be given the person submitting the suggestion. All committees make reports at the general safety meeting each month.

Orderly arrangement of trimming presses and tote boxes in the cold trimming department has done much to reduce accident danger

Production Has Increased

"When the guarding of machines was started, the supposition was that production would suffer, but due not only to cleanliness and orderliness of all departments, but also to the fact that the removing or guarding of mechanical hazards has eliminated the fear from the operator's heart, the employe is able to do his work more successfully and with greater speed," Mr. Stahl, personnel manager, declared recently.

"Production has not only been maintained but has been increased and the Transue & Williams corporation is very well satisfied that the present safety program has more than paid for itself by the elimination of accidents and the increase that has been shown in production.

"But far better, we have gained the friendship and respect of our employes and made that relationship between employer and employe just a little closer. We feel better, knowing that we are doing our share in preventing accidents and educating our employes to be better and safer workmen."

Steel Is Improved by Vanadium Additions

(*Concluded from Page* 45)

tain a minimum of 0.15 per cent vanadium and are otherwise of standard composition, with a carbon range usually of 0.25 to 0.37 per cent. Vanadium steel castings generally are annealed or are normalized followed by a tempering treatment. Occasionally, for special purposes, castings are not given any heat treatment while for other special purposes they may be quenched in oil or water and tempered. Castings of this composition have a much higher elastic ratio than carbon steel castings of corresponding strength and hardness. The elastic limit and tensile strength will average 30 to 50 per cent greater with no loss in ductility. The following is a standard specification for normalized and tempered vanadium steel castings, containing 0.30 to 0.37 per cent carbon:

Yield point, lbs. sq. in.....	55,000
Tensile strength, lbs. sq. in.	85,000
Elongation in 2", per cent....	22
Reduction of area, per cent	40

Chromium-vanadium steels are among the most widely used structural steels containing vanadium and most frequently conform to the requirements shown in Table I.

Chrome-vanadium steels with carbon range of 0.12 to 0.20 per cent, corresponding to S.A.E. 6115 and 6120 steels, are used for case hardened parts. They yield a hard, tough, strong case of remarkably high wear resistance, strongly bound to the core, due to the low rate of drop in the carbon content as the core is approached, and free from any tendency to flaking, powdering, or flowing under pressure.

The usual heat treatment procedure is as follows:

Carburizing: At 1650 to 1700 degrees Fahr. (900 to 930 degrees Cent.) and cool in the pots.

Quenching: From 1600 to 1650 degrees Fahr. (870 to 900 degrees Cent.) into oil.

Requenching: From 1475 to 1500 degrees Fahr. (800 to 820 degrees Cent.) into water.

Tempering: At 375 to 425 degrees Fahr. (190 to 220 degrees Cent.).

While this treatment gives the best properties in both case and core, many purposes are served by a single quench. Chrome-vanadium steels are more applicable to single quenching than many of the other alloy steels, due to the fine grain in the case, even after the higher temperature necessary for a single quenching operation.

This type of chrome-vanadium steel (i. e. 6120 and sometimes 6125) responds in a superior manner to the cyaniding process for surface hardening. The nitrides formed are finer and there is much less tendency to the long needle structure usual in carbon and other steels. The transition from the hard surface to the core is not abrupt, and even in the case of long-time cyaniding there is no danger of embrittlement of the core.

(*To be continued in the Aug.* 28 *issue of* STEEL.)

Booklet Surveys Midwest Bituminous Coal Industry

A comprehensive survey of the bituminous coal industry in the middle west in relation to the production, use and future of the fuel are given in bulletin No. 22 of the engineering extension department of Purdue university, West Lafayette, Ind., entitled, "Proceedings of the Midwest Bituminous Coal Conference." The 217-page booklet gives a complete picture of the conference held at the university, April 9-11, and gives abstracts of papers presented which include papers on availability, classification and suitability of Illinois and Indiana coals for power, industrial and domestic uses of the coals such as gas producers, ceramic and glass production, a discussion of stokers and plant reconditioning, and general addresses on economic phases of the industry.

Panama City Scrap Dealer Has Popular Business

BY RUSSELL R. VOORHEES

IN PANAMA CITY, in the heart of Central America, S. P. Santos, a native of Portugal, operates a scrap metal business and is known for his ability to extract profit from the scrap he buys. In a country in which many things are difficult to get, Santos has found ways to build what people want from the materials available with the result that his place of business is looked upon with favor. Although S. P. Santos & Co. are listed as dealers in new and used merchandise of every description, it is to all intents and purposes a second-hand metal business. The other items taken in during the course of a year are so few in comparison with the metal that they are an insignificant part of the total.

The establishment of Santos consists of many piles of materials scattered around apparently in utter abandon, but in reality each is in its proper place. One pile contains broken and discarded automobile springs bought for 1 cent a pound from garages or elsewhere without regard to the kind of spring or condition. From this pile the springs later are extracted and are sold to garages and others needing new leaves. The springs are matched and carefully repaired by the blacksmith who is a part of the Santos business. The resale price of these springs is 10 cents a pound plus the charge for blacksmith work.

Wagon Wheel Rims Used

Discarded wagon wheel rims from the wheels of United States army wagons stationed at the Panama Canal are bought and turned into stays for masts on small boats. For the old rims Santos pays 1 cent a pound, carts them himself and pays the Panamanian government the 15 per cent duty exacted by law on imports into the country, the Canal Zone not being a part of the Republic of Panama.

The aluminum in automobile crankcases is used to cast bearings which are later sold. Scrap lead of all descriptions is purchased and cast into neat little pigs which are sold to plumbers of Panama City. Frequently a small boat will need a new propeller and Santos will supply this at a good profit. The propellers are cast from scrap brass purchased whenever the opportunity affords.

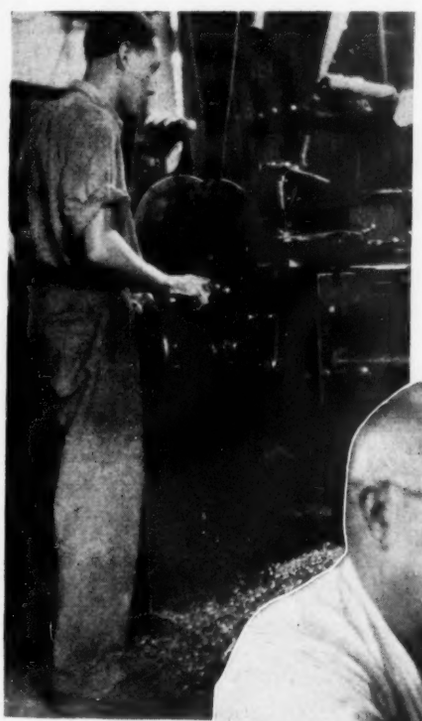
Galvanized steel garbage cans are much in use in Panama, but they wear out eventually, and when this happens Santos buys the old rims for 10 cents apiece and uses them to rebuild the cans. For the body he uses new first quality sheet steel. For the reinforcing he uses strips of galvanized sheet steel that has been damaged by salt water and thus lost its luster. He buys this cheaply in Panama City because it does not sell as well as the bright variety. Thus he builds what amounts to a new can, nothing but the old rims being used.

Bolts for any purpose always can be found, because Santos makes them to order. Using scrap for the bolt, the blacksmith puts on the head, the threads are cut and a perfect bolt has been made to fit a place where possibly no bolt in the entire country would fit.

This Portuguese buys anything in the metal line even to old cars which are dismantled and the various parts resold, the metal parts being worked into useful articles. He ships some scrap to the United States, but much of it is used again in Panama City. He has come to be known as the last resort for things that cannot be found elsewhere. Recently he erected a large building next to the one that he had been occupying, this new building to be used to store the various metals.

Some idea of the prices paid for various metals can be gained from

(Concluded on Page 56)



(Left)—A machinist at his lathe. (Below)—S. P. Santos and secretary. (Right)—Blacksmith shop showing scrap pile. In foreground is galvanized steel can to be rebuilt

Mixed Gases Promote Economy in Steelmaking

BY WILLIAM C. BUELL JR.
Consulting Engineer

FUEL economy in the operation of open-hearth and reheating furnaces is accomplished through the use of mixed blast furnace and coke oven gas. Varying the volume ratio of the two gases in different proportions affects the calorific qualities of the mixture as explained in the first installment presented in the Aug. 7 issue of STEEL. In this, the concluding installment, the author, William C. Buell Jr., consulting engineer, Cleveland, cites the thermal capacity characteristics of the two gases and explains the economies of the use of surplus and nonsurplus fuel.

Part II

THE elevation of furnace temperatures from the preheat of air and, in some cases, for air and blast furnace gas is the next consideration. The heat content to produce higher temperature is shown in the thermal capacity curves, Figs. 4 and 5. In Fig. 4 temperature is given against the B.t.u. content of the air necessary to burn the gas (plus 20 per cent excess air for the blast furnace gas increment), but the temperatures or the B.t.u. shown will be lowered in the combustion reaction in direct relation to the ratio of the air to the final air-gas mixture. These relations are shown in Table V.

The final figures in Table V assist in calculating the elevation of temperature of the combustible mixture when used in conjunction with Fig. 4, and are in accord with the calculations indicated in the following example:

Assume a mixture of 80 per cent blast furnace gas and 20 per cent coke oven gas and that the air is to be preheated to 1400 degrees Fahr. reading to the proper curves in Fig. 4 it is found that the heat content of the air will be 38 B.t.u. If this figure is multiplied by 0.62 from the last column of Table V the result will give the 24 B.t.u. equivalent of the gas-air mixture. Reading the curve in reverse order it will be found that the mean temperature of the gas-air mixture will be 920 degrees Fahr. If this figure be added to the 2175 degrees Fahr. furnace temperature the sum 3095 degrees Fahr., will represent the maximum probable furnace temperature.

Table V shows the necessity of preheating blast furnace gas and air where blast furnace gas in the mixture is greater than 60 per cent. This is essential on account of the large volume of fuel in the mixture, unless the air only can be preheated to seemingly impossible temperatures to give a sufficiently elevated mean temperature to the combustible mixture.

How Temperature Is Read

If from Fig. 4 a vertical line is dropped to the temperature scale from line H—H at its intersection with the appropriate mixed gas coordinate, the temperature figure will be that to which all air must be preheated if a furnace temperature of 3500 degrees Fahr. is required. This is taken as the temperature necessary in the operation of the open-hearth furnace. The figures read in this manner include the correction for the elevation of the gas temperature when this commingles with the air to the mean of the mixture temperature of the gases.

A vertical line dropped as described from line G—G will indicate the air temperature necessary to develop a furnace temperature of 2500 degrees Fahr. which is taken as that of soaking pit and reheating furnace practice. Preheat to a minor degree should be practiced where the proportion of blast furnace gas exceeds 75 per cent in normalizing or annealing practice. In the foregoing discussion of preheat temperatures the question of economy of operation has been given no consideration.

The figures used should be minimum preheat required to accomplish a given furnace temperature. Additional preheat to any degree will lower the fuel cost of operation and improve conditions

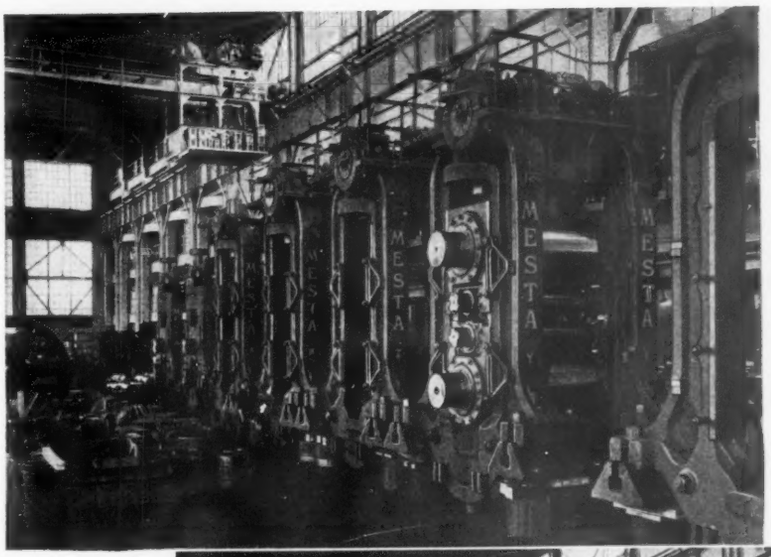
TABLE IV

Data on Air Preheat and Furnace Temperature

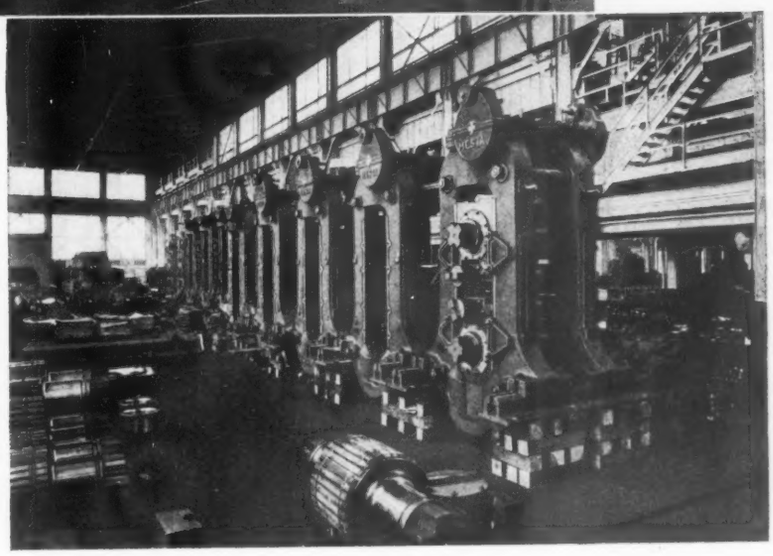
Mixed gas, cu. ft. Blast Furnace	Coke oven	Air for combustion, cu. ft.	Combustible mixture volume, cu. ft.	air, %	Maximum furnace temp., degrees Fahr.*	Final furnace temperature 2500 Fahr./air B.t.u.	deg. Fahr.	3500 Fahr./air B.t.u.	deg. Fahr.
1.0	....	0.84	1.84	46.0	1800	22	1600	55	3820
0.9	0.1	1.24	2.24	55.0	1975	20	987	58	2800
0.8	0.2	1.62	2.62	62.0	2175	16	560	59	2170
0.7	0.3	2.02	3.02	67.0	2325	11	295	60	1712
0.6	0.4	2.40	3.40	71.0	2440	5	116	62	1525
0.5	0.5	2.80	3.80	74.0	2525	....	.....	65	1343
0.4	0.6	3.19	4.19	76.0	2600	....	.....	68	1220
0.3	0.7	3.58	4.58	78.0	2650	....	.....	71	1125
0.2	0.8	3.97	4.97	80.0	2700	....	.....	73	1030
0.1	0.9	4.36	5.36	81.5	2750	....	.....	75	955
....	1.0	4.75	5.75	83.0	2800	....	.....	77	875

* Combustion with cold gas and cold air.

FOUR HIGH CONTINUOUS MILLS
For Rolling Wide Strip



Four High 60" Hot Strip Mill on Mesta Erecting Floor



Four High Cold Strip Mills on Mesta Erecting Floor

Designed and Built by

MESTA MACHINE COMPANY

Pittsburgh, Penna.

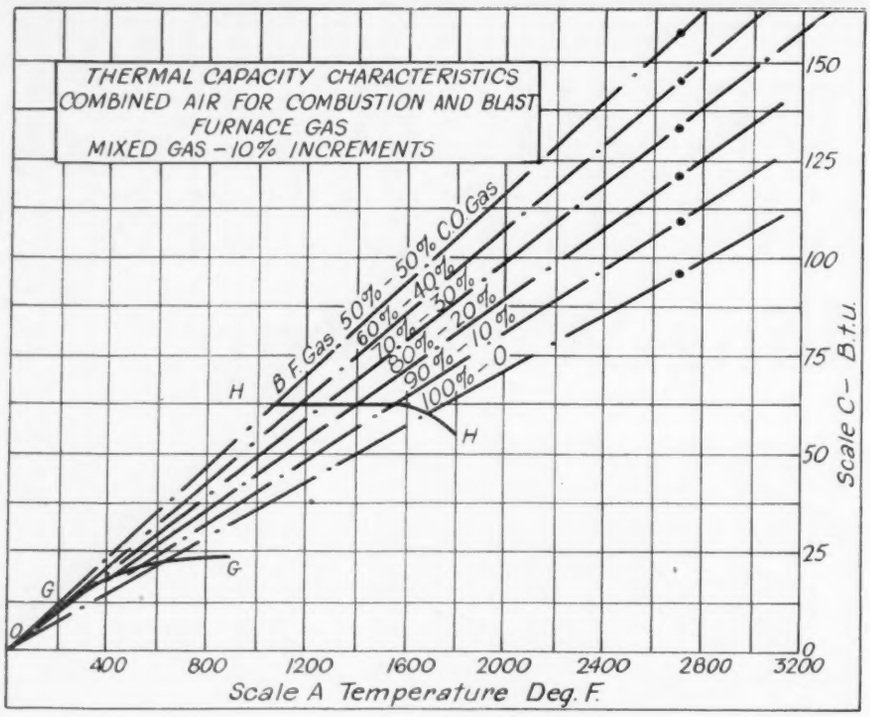


Fig. 4—Thermal capacity characteristics of combined air for combustion and blast furnace gas with the gas mixed by 10 per cent increments

surrounding operation, and accordingly should be practiced.

Table IV gives some data regarding the air and its preheat. Inspection of this table shows that blast furnace gas is a satisfactory medium for soaking pit or reheating furnace practice providing air, preheated to 1600 degrees Fahr., can be obtained. This is being accomplished in soaking pits but it is doubtful if the required preheat could be obtained in a reheating furnace of the continuous type.

A small enrichment of the blast furnace gas with a nominal air preheat assures the successful operation of a reheating furnace and will improve soaking pit operation. This affords considerable heat reserve when peak production becomes necessary.

Eighty per cent blast furnace gas and 20 per cent coke oven gas with a calorific value of 160 B.t.u. should premise excellent heating practice in the 2500 degree Fahr. range.

Good open-hearth furnace operation and results at present are being obtained on a mixed gas of about 225 to 250 B.t.u. This would place the mixture between 0.7:0.3 and 0.6:0.4 of blast furnace and coke oven gas respectively and the necessary air preheat between 1712 and 1550 degrees Fahr. It would seem as if the mixture containing the larger ratio of blast furnace gas would be satisfactory.

Preheat Both Gas and Air?

Attention has been called to the greater heat capacity of the gas itself as compared to the air for its combustion (see Fig. 1, Curves "B" and "C"), and this may cause speculation as to results were both the gas itself and the air preheated.

The thermal capacity characteristics under this condition are presented in the curves of Fig. 5. In these curves it is presumed that all air for the combustion of the mixed gas, including 20 per cent excess for the blast furnace gas, and the blast furnace gas itself is preheated. The intersections of the line H—H show the minimum preheat required to produce the open-hearth temperature of 3500 degrees Fahr. and G—G the soaking pit or reheating furnace temperature of 2500 degrees Fahr. The essential data of this condition are shown in Table VI.

Certain data regarding preheat from Tables IV and VI are combined in Table VII for easy comparison, and bring out strongly the advantages from preheating both the blast furnace gas and the air. It would be practically impossible to preheat the air to a temperature above 3000 degrees Fahr. which would be necessary for open-hearth practice in the case of 100 per cent blast furnace gas.

Open-hearth temperatures will be obtained if 60 B.t.u. can be given to the air and gas jointly; producing a mean preheat of 1700 degrees Fahr.

TABLE V

Relation of Air to Combustible Mix

Mixed Gas, cubic feet		Air for combustion, cu. ft.	Combustible volume, cu. ft.	Mix-air, %
Blast furnace	Coke oven			
1.0	.....	0.84	1.84	46.0
0.9	0.1	1.24	2.24	55.0
0.8	0.2	1.62	2.62	62.0
0.7	0.3	2.02	3.02	67.0
0.6	0.4	2.40	3.40	71.0
0.5	0.5	2.80	3.80	74.0
0.4	0.6	3.19	4.19	76.0
0.3	0.7	3.58	4.58	78.0
0.2	0.8	3.97	4.97	80.0
0.1	0.9	4.36	5.36	81.5
.....	1.0	4.75	5.75	83.0

TABLE VI

Data on Air and Blast Furnace Gas Preheat

Mixed gas, cu. ft.		Air for combustion	Volume combustible mix.,	Air + blast fur. gas,	% Air + blast furnace gas	Max. fce. temp., deg. Fahr.*	Final furnace temperature — 2500 degrees Fahr.		Final furnace temperature — 3500 degrees Fahr.	
Blast furnace	Coke oven	cu. ft.	cu. ft.	cu. ft.			B.t.u.	preheat deg. Fahr.	B.t.u.	preheat deg. Fahr.
1.0	.....	0.84	1.84	1.84	100	1800	24	700	60	1700
0.9	0.1	1.24	2.24	2.14	96	1975	22	600	61	1590
0.8	0.2	1.62	2.62	2.42	92	2175	19	350	62	1440
0.7	0.3	2.02	3.02	2.72	90	2325	8	200	62	1300
0.6	0.4	2.40	3.40	3.00	88	2440	....	.....	62	1205
0.5	0.5	2.80	3.80	3.30	87	2525	....	.....	62	1120

*Combustion with cold gas-cold air.

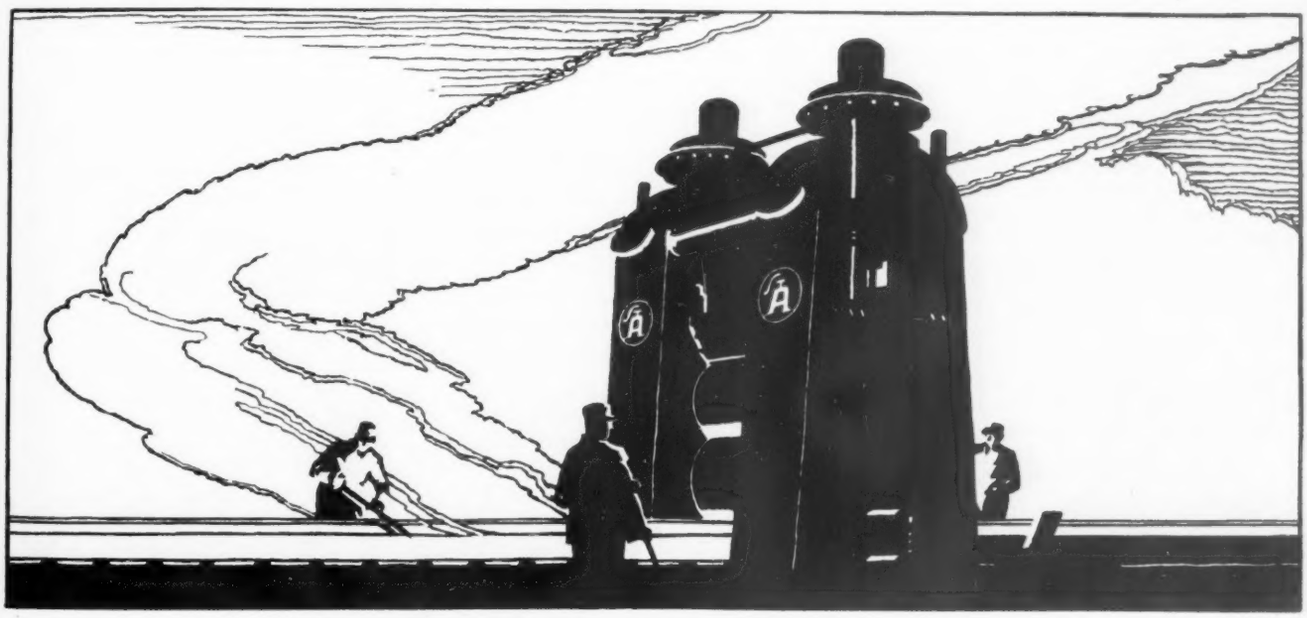
UPKEEP NOT AN AFTERTHOUGHT IN AETNA-STANDARD DESIGNED MILLS

These Modern Engineers design and build steel mills with full realization of the influence exerted by low maintenance on operating costs.

Uninterrupted performance in modern steel mills is altogether as essential to economical production as are mechanical features that provide speed, accuracy and increased output.

Aetna-Standard Steel Mills—Rolling Mills, Sheet and Strip Mills, Tin Mills, Seamless Tube Mills—are built to fit your present and future requirements; to operate efficiently and continuously under increasing pressure of heavier demands. Simplicity, adjustability of parts, easy accessibility, are some of the means used to promote smoother, day-and-night operation with less wearing.

Let Aetna-Standard Engineers study your plans, and offer suggestions for low maintenance efficiency in your mills. You will find their advice valuable—and of course it imposes no obligation.



THE AETNA-STANDARD ENGINEERING CO.

YOUNGSTOWN . . . . . OHIO

DESIGNERS AND BUILDERS OF ROLLING MILL MACHINERY

TABLE VII

Comparative Data on Air, and Air and Blast Furnace Gas Preheat

Mixed gas cubic feet Blast furnace	Coke oven	Max. fce. temp., deg. Fahr.*	Preheat for furnace temperautre 2500 degrees Fahr. Air B.t.u.	Air deg. Fahr.	Air and gas B.t.u.	Air and gas deg. Fahr.	3500 degrees Fahr. Air B.t.u.	Air deg. Fahr.	Air and gas B.t.u.	Air and gas deg. Fahr.
1.0	....	1800	22	1600	24	700	55	3820	60	1700
0.9	0.1	1975	20	985	22	600	58	2800	61	1590
0.8	0.2	2125	16	560	19	350	59	2170	62	1440
0.7	0.3	2325	11	295	8	200	60	1712	62	1300
0.6	0.4	2440	5	116	....	.....	62	1525	62	1205
0.5	0.5	2525	....	.....	....	.....	65	1348	62	1120

*Combustion with cold gas-cold air.

However, existing preheat equipment is not sufficiently efficient to effect the return of such a large percentage of the heat of the waste gases as is represented in the 60 B.t.u.; nor can straight blast furnace gas be used for open-hearth practice.

With air and blast furnace gas preheated it is feasible to make steel with blast furnace and coke oven gas in the ratio of 0.8 to 0.2, rather than with the 0.75 to 0.25 ratio now used with the preheat of air alone.

A study of Table VII is most convincing evidence of the desirability of preheating the blast furnace gas and air where the ratio of gas to air is 0.5 to 0.5 or greater. The lower temperature of gas and air necessary, is easier accomplished than the much higher preheat temperature of the air alone, even though the B.t.u. requirements are nearly the same in both cases. In considering the preheat of the blast furnace gas it will be of interest to note the relative preheat apparatus volumes necessary. Assuming the blast furnace gas and air to leave the checkers at equal temperatures, the percentages of Table VIII will hold.

Checker Volume Varies

In ordinary regenerative furnaces fired with producer gas it is customary to make the gas checker chambers 35 to 40 per cent of the total furnace volume. This arrangement probably will be found satisfactory for all but the first, fifth, and sixth cases of Table VIII. In the first case the conventional design would be satisfactory if the usual arrangement was reversed and the air checkers used for the blast furnace gas and vice versa. In the last two cases the proportion of checker chamber volumes is so small that if regenerators were designed on this basis, operating difficulties would be met that would debar their successful operation. No objections would be present if an independent preheater of the plate type were used to preheat the blast furnace gas.

A prime requisite to the successful use of blast furnace gas in furnaces is that the air and fuel be mixed in a turbulent manner to assure a thorough and complete comingling. In the case of mixed gas, three fluids, all at different velocities, enter the combustion chamber. Prompt and thorough mixing will result if ports are kept of relatively small area and provisions are made to interrupt stream line flow.

Economics Should Be Studied

The economics of the use of surplus and the extensions of use of nonsurplus gas to metallurgical and reheating operations offers several interesting possibilities. In the heat balance of the modern steel plant all coke oven gas produced may find use in various ways. There will be some surplus of blast furnace gas, unless this is used in furnaces. The gas producer will supplement the furnace fuel and pulverized, or stoker-fired coal may supplement the boiler fuel. Of these fuels, coke oven gas has a ready commercial field outside of the plant at a profitable price. Blast furnace gas has no field outside of the plant other than its flow as electrical energy into the network of the public service utility. Producer gas as coal is purchased as is also the solid fuel for the boiler house.

Where coal is used the quantity varies with the demand above the flow of blast furnace and coke oven gas and, consequently, is necessary only as required and there is no waste.

Where blast furnace gas is surplus and cannot be used to generate power for sale to the network it is voided to the atmosphere as an absolute loss and to the discomfort of the surrounding community. Where it is sold as power it is at a rate so low as to be without profit. Of course the rates at which power is sold vary considerably, but in industrial districts it is not much greater than two-and-a-half mills per kilowatt hour. Assuming there will be about 17,000 B.t.u. of blast furnace gas in 1 kilowatt hour and making no allowance for operating costs, the value of the gas under these conditions amounts to 15 cents per million B.t.u. (This figure is used merely to give an arbitrary value to the blast furnace gas).

Value of Gases Varies

Coke oven gas has a ready sale at perhaps 25 cents per million B.t.u. Producer gas with its relatively great installation and operating expense costs about 20 cents per million B.t.u. with $2 coal. Steam-making with coal, including operating costs, is about 12 cents per million B.t.u. for either pulverized or stoker firing. By-product tar has a resale value at around 25 cents per million B.t.u. and the cost of small oil is somewhat higher. From the metallurgical viewpoint blast furnace or producer gas is the best of the fuel group because of the small amount of the contained scale-forming components.

Of course the solid fuels as such cannot be used in the open-hearth or soaking pits and have not found much favor when used in reheating furnaces.

Accordingly it would appear as if the greatest fuel economy in the making and reheating of steel and in the generation of steam, when considered as a whole, may be had by the use of blast furnace or mixed gas. As the deficiency of blast fur-

TABLE VIII

Relative Volumes in Preheat Apparatus

Mixed Gas, cu. ft. Blast fur.	Coke oven	Air for combustion, cu. ft.	Blast furnace gas and air for combustion, cu. ft.	Preheat air checker volume, Per cent	Preheat Air checker volume, %	Preheat and Furnace gas checker volume, %
1.0	....	0.84	1.84	100	46	54
0.9	0.1	1.24	2.14	100	58	42
0.8	0.2	1.62	2.42	100	66	33
0.7	0.3	2.02	2.72	100	74	26
0.6	0.4	2.40	3.00	100	80	20
0.5	0.5	2.80	3.30	100	85	15

for those Heavy Drives

Use James Generated Continuous-Tooth Herringbone Gears. • • They are the logical drive for heavy equipment of all kinds, drawing benches, conveyors, plate and bar rolls, lehrs, calenders, hoists, mixers, or wherever heavy duty, shock load equipment is used.

Greater rim speeds, smaller sizes for a given drive, vibrationless action, the elimination of backlash, and longer life are guaranteed.

Let our Department of Engineering and Service help you to lay out and select the proper gears for that heavy drive—their help implies no obligation.

Send for Catalog

WE MANUFACTURE

Planetary Spur Gear, Worm Gear and Herringbone Gear Speed Reducing Transmissions, to drive up, down, horizontally or at an angle, Cut Spur, Bevel, Mitre, Worm, Internal, Helical and Tractor Gears of all materials, Racks and Flexible Couplings

D. O. James Manufacturing Company
1114 West Monroe Street, Chicago

D.O.JAMES

nace gas for steammaking develops, the difference can be made up by pulverized coal firing of the boilers. Of course over the weekend blast furnace gas is to be used under the boilers to the limit of their requirements.

This will release the major portion of the coke oven gas for sale or for use to auxiliary low-temperature operations where the cost of preheating apparatus is not economically justified; the producer plant, which usually occupies valuable space, can be eliminated; and, the varying fuel requirements of the boiler house will be met by pulverized coal, that is especially well fitted for just that purpose.

Over-all plant fuel cost will be reduced, probably more than a quarter and a considerable added savings will be developed by the reduction of scale and oxidation losses in the furnaces and pits.

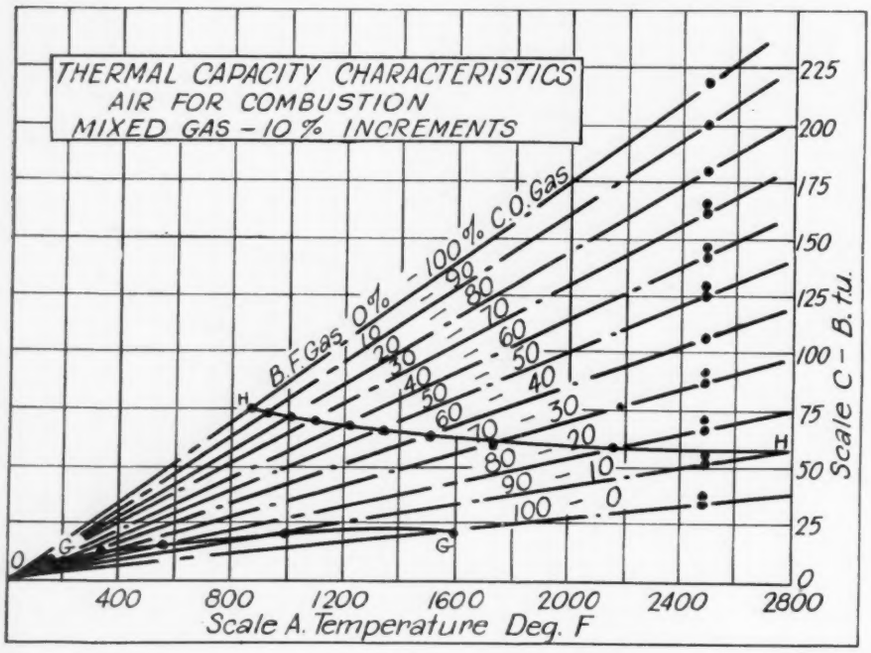


Fig. 5—Thermal capacity characteristics of air combustion with gas mixed in 10 per cent increments

Panama City Scrap Dealer Has Popular Business

(*Concluded from Page 49*)

these typical quotations: Copper, 7 cents a pound; brass, 4 cents; steel, 4 cents; and aluminum, 5 cents. His charges for machine work on the lathes are $1.50 gold an hour, exclusive of material. The business includes a machine shop, a foundry where both brass and aluminum is cast and a blacksmith shop.

Santos speaks English fluently although he was born in the Azores islands. When 19 he went to the United States where he remained 25 years. He has been in Panama for over ten years.

Safety in Metals Industry To Be Discussed

Analysis of the causes of industrial accidents, and discussions of methods of preventing this type of accident will be the principal topics to be considered by the Metals section of the National Safety council, meeting at the William Penn hotel, Pittsburgh, Sept. 29 to Oct. 3. In addition to the program of technical papers and general discussions, the section will select officers for the year 1930-31.

Papers and authors are as follows:

Tuesday, Sept. 30

"Metals Section Accident Statistics for the Year 1929," by E. R. Rose, safety director, Republic Steel Corp., Youngstown, O.

"Analysis of the Causes of Accidents in the Metals Industry," by W. Graham Cole, director, safety service, policyholders service bureau, Metropolitan Life Insurance Co., New York.

Wednesday, Oct. 1

MORNING

"The Foreman as a Safety Factor in Production," by F. J. O'Conner, welfare superintendent, E. I. duPont de Nemours & Co., Pennsgrove, N. J.

"Safety in the Erection of Steel," by W. A. Hazard, superintendent of erection, Bethlehem Steel Co., Bethlehem, Pa.

"The Machine Age and Its Relation to Accident Prevention," by Dr. R. H. Lansburgh, First National bank, Detroit.

AFTERNOON

Foundry Session

"Foundry Engineering and Safety," by J. W. Beall, insurance commissioner, Ohio Steel Foundry Co., Lima, O.

"Personal Protective Devices for the Foundry Worker," by S. W. Doran, personnel superintendent, Pratt & Letchworth Co., Buffalo.

Round table discussion of foundry hazards, led by W. E. Watters, safety engineer, National Malleable & Steel Castings Co., Chicago.

Thursday, Oct. 2

Award of Metals section trophies, by C. E. Pettibone, president, National Safety council, Chicago.

Report of Safe Practices committee, by J. M. Woltz, safety director, Youngstown Sheet & Tube Co., Youngstown, O.

"The Quitter," a playlet by M. D. Conroy. Produced by the school of drama, Carnegie Institute of Technology, Pittsburgh.

"Safety Kinks in the Metals Industry," film strip, presented by John A. Oartel, chief of safety bureau, Carnegie Steel Co., Pittsburgh.

Anticipate Wider Use of Selenium in Future

Production of selenium, one of the little heard-of elements, could be increased largely if demand so required, according to the bureau of mines, Washington, which has just published information circular No. 6317, "Selenium and Tellurium," by R. M. Santmyers. Selenium is an essential constituent of several minerals. The commercial source, however, is the relatively minute amounts present as impurities in various ores, and manufactured as a by-product in the refining of copper and lead, and from the manufacture of sulphuric acid from pyrite.

In the United States alone, the potential production of selenium, virtually as a by-product of major metallurgical operations, has been estimated at 400,000 to 450,000 pounds annually. The element has possible new uses and the research that has been actively in progress for many years is likely to uncover additional fields of employment.

Purchasing Agents Schedule Committee Meeting

A meeting of the executive committee of the National Association of Purchasing Agents will be held in conjunction with the sixth district convention of the national association at Pittsburgh, Oct. 16-17. Headed by the national president, Joseph E. Mills, purchasing agent for the city of Detroit, and George Renard, secretary of the national association, this committee will confer with delegates in reference to national conditions and problems. Frank H. MacKnight, Westinghouse Air Brake Co., represents the sixth district on this committee. R. W. Mackenson, Pittsburgh Coal Co., is in charge of convention arrangements.

LARGE USES OF STEEL IN SMALL WAYS

172nd Article

Jacks Require 25,000 Tons of Steel Annually

TO THE average individual a jack is an article connected with the distasteful task of changing a flat tire on an automobile, but to a number of industries the jack is an invaluable aid in the performance of a variety of operations. And to the iron and steel industry the manufacture of jacks offers a relatively large market for its products.

Accurate figures on the production of industrial jacks are lacking but of the more important types annual output is estimated at about 40,000 to 45,000, with a total iron and steel consumption of around 2000 tons. Steel consumption in the manufacture of automotive jacks is placed at 20,000 to 25,000 tons annually. Added to these figures would be a smaller tonnage used in making many specialty items commonly listed under the general heading of jacks, such as braces and fittings, pinion pullers, armature lifts, cable reel lifts, and the like.

The most important type of industrial jack is the trip or track jack, shown in an accompanying illustration, and employed extensively by railroads. This jack is used principally in construction, surfacing, repairing and ballasting work, has a capacity of around 15 tons and weighs about 60 pounds. The automatic lowering jack, similar in appearance, has a broader application outside of track work, being used in contracting, bridge building, car work and handling of machinery.

Differing from the cheaper automobile jack which usually is made of stamped steel parts, most working parts of the track and automatic lowering jacks, in addition to the outside covers, are drop forged from special analysis steels. The frames or bases generally are of refined malleable iron, with the socket lever often made of heat-treated electric furnace steel. Racks are forged steel with machine cut teeth, while the pawls also are drop forged. Malleable iron predominates in castings used for all types of modern lifting jacks.

For larger capacities journal jacks, self-lowering and speed controlled jacks, and geared automatic lowering jacks are employed. Journal jacks, one of which is illustrated, are designed for lifting and adjusting low-set loads, tanks, structural material and are widely used by street and steam railways. The frame is malleable iron casting within which moving parts revolve in grease packing. Other types of jacks named have higher lifts, can accommodate loads up to 100 tons, and are of heavy construction, the larger ones weighing more than 400 pounds.

Miniature Laboratory Tests Thyratron Tubes

Seeking to expand the use of the newly developed thyratron tube to include the transmission of power under more advantageous electrical conditions, an experimental miniature laboratory equipped with the tubes has been set up by the General Electric Co., Schenectady, N. Y. The tube, developed from a series of original investigations of electron discharges in gases which were carried out by Dr. Irving Langmuir in 1914, has inherent advantages as a means of controlling electric power, and has begun to be used most effectively in this manner in the electrical industry.

The artificial transmission line which is to attempt to find means of developing the transmission power of the tube, is represented by a copper bar about 8 feet in length. Electrical conditions were imposed, in the matter of ohmic resistance, which made this line equivalent to 400 miles of transmission conductor in a commercial system. As the longest commercial system now in existence is 250 miles in length, this experimental line, in its electrical characteristics, was more than 50 per cent beyond present practice.

Dr. Irving Langmuir, holding a thyratron tube, developed as a result of his early investigation of electron discharges in gases

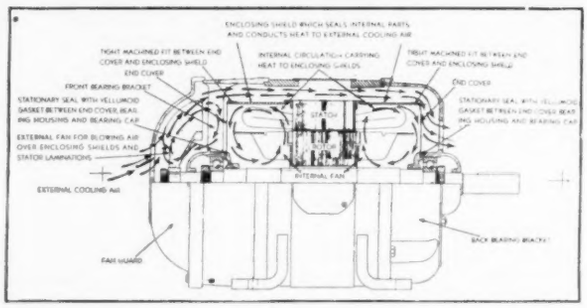
The thyratron tube has been 15 years in reaching its present state of development as a perfected and effective control device. After Dr. Langmuir had conceived the idea of making use of the characteristics displayed by electron discharges in gases for controlling an electric arc by means of a grid, Toulon in France experimented in 1922 with Langmuir's process and devised an improvement on his method. About 1926, Dr. Langmuir envisioned the broad practical possibilities of the principle, and thereafter Dr. A. W. Hull in the same laboratory, developed the thyratron tube to the present status.

Keep Out Dirt

Dirt is an enemy of the best-made motor. If allowed to collect on the windings and clog the air gaps of induction motors it is sure to be a trouble maker.

The simplest way to combat it is to keep it out. This can be done at a reasonable first cost with the enclosed fan-cooled Reliance Motor. The method of cooling used by Reliance is so effective that these enclosed motors are interchangeable in mounting dimensions with open motors of the same ratings.

The stator coils and rotor are completely enclosed. Dirt and scale cannot get in to clog air gaps and damage the windings.



Cross-sectional view of enclosed fan-cooled Reliance Induction Motor. There are no running seals to wear and lessen the effectiveness of the enclosure. Sizes up to 100 hp. 1200 r.p.m.

Steel mills are fast learning the value of this improved motor design. They are saving the cost of frequent inspection and cleaning. Repair bills are less and their motors are showing a better record for steady operation.

More interesting details are given in our Bulletin 107.

Reliance Electric & Engineering Co., 1082 Ivanhoe Road, Cleveland, Ohio

Branches: Birmingham, Boston, Buffalo, Chicago, Cincinnati, Detroit, Milwaukee, New York, Philadelphia, Pittsburgh, St. Louis, Toledo.

Representatives: Denver, Kansas City, Knoxville, Los Angeles, San Francisco, Seattle.

RELIANCE A-C D-C MOTORS with Ball Bearings

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

USES:

A New Cast Iron

New material offering many possibilities to designers described in Machine Design, July 1930, *p.* 40, 2½ *pp., 4 illusts., 2 tables.*

With castings one of the primary factors on which the engineer builds it is not surprising to note that more and more effort has been expended to produce an iron which will meet new requirements and still maintain a liberal amount of versatility. This new material is known as "Meehanite" and was developed by G. F. Meehan. According to claims it possesses most of the qualities of carbon steel. Casting and machining properties are similar to those of ordinary cast iron, and it offers great resistance to corrosion. It also is particularly useful for castings where nonporosity, resistance to wear and increased strength are principal considerations. Reduced weight of individual parts is an outstanding feature in its application.

Meehanite metal is an iron with a close grain, having a pearlitic body wherein the graphite is distributed in nodules and in more numerous, smaller flakes than are found in gray iron. As can be seen in a photomicrograph of the material, there is absence of segregation and uniformity of structure and grain size. The structure is similar to that of fine steel though castings produced from it have the appearance of gray iron. Results of the Stanton test show a value of 2700. This homogeneous structure provides considerable resistance to corrosion and oxidation under certain kinds of working conditions.

—STEEL 8-21-30

Automobile Body Steel

A study of sheet and strip steel for automobile bodies from a metallurgical point of view, by Joseph Winlock and George L. Kelley in Transactions of the American Society for Steel Treating, August 1930, *p.* 147, 32 *pages,* 23 *illusts.*

Basic open-hearth steel containing under 0.14 per cent carbon, under 0.60 per cent manganese, under 0.045 per cent phosphorus and under 0.045 per cent sulphur is the steel most widely used for deep drawing purposes. Alloy steels have not been used extensively partly on account of added cost and partly because the inherent strength of the steel is of secondary importance. After describing briefly the manufacture of sheet steel and strip steel, the authors devote considerable attention to what happens in the metal when it undergoes hot work and cold work.

Stretcher strains, common defects in deep drawn work, are explained and annealing at approximately 1100 degrees Fahr. is recommended to prevent the steel from exhibiting local deformations and aging. The article concludes with a consideration of the structural and physical characteristics of the metal during box annealing or normalizing.

—STEEL 8-21-30

Nitrided Steel

A discussion of the properties and uses of nitrided steel, by H. A. DeFries in Machine Design, August 1930, *p.* 31, 4 *pp.,* 6 *illusts.,* 3 *tables.*

A series of alloy steels known as Nitralloy, containing varying amounts of carbon, approximately 1.0 per cent aluminum, 1.0 per cent chromium and 0.2 per cent molybdenum acquire maximum surface hardness when exposed to ammonia gas under definite conditions. The hardness is retained at elevated temperatures and the steel possesses a marked resistance to corrosion. Nitriding temperatures range between 900 to 1000 degrees Fahr., 950 degrees being most common. Heat treating is performed before nitriding and no further treatment is necessary after exposure to ammonia gas. Because of the low temperature, no appreciable warping or distortion occurs.

Manufacture of parts from Nitralloy does not differ materially from shop methods commonly employed. Where high physical properties are necessary, normalizing followed by an oil quench and draw are used, as is customery on present types of alloy steel. Detailed preliminary operations scheduled are given for sections not requiring heat treatment and for simple and complicated sections requiring heat treatment. Tables give typical Nitralloy analyses and physical properties of the two principal grades, G and H. The nitrided case is so hard that it is beyond the effective range of usual hardness testing methods.

—STEEL 8-21-30

FABRICATION:

Cutting Oils

Cutting oils and the theory of their functions in connection with modern cutting tools, by J. W. LaBaree, in Carboloy, August 1930, *p.* 6, 3 *pp.*

Most shop men think of cutting oil only as a cooling medium. The author analyzes the action of a metal cutting tool as that of a wedge, only one side of which is in use. The granular cohesion of the metal, equal to about 60,000 pounds per square inch in the case of low carbon steel, and as high as 300,000 pounds per square inch in certain alloy steels, is overcome by the tool. In doing this, a minute advance gap is formed ahead of the edge of the tool. As a result, the heavy pressure falls just back of the cutting edge where the chip strikes and is deflected. Proper cutting oil will rush into the vacuum formed in the advance gap, thereby lubricating the underside of the chip where it impinges upon the top of the tool. At the same time it lubricates the torn surface on the body of the piece which rubs against the tool immediately below the cutting edge.

According to the author's theory, this requires a delicate balance in the properties of the cutting oil. It must be an effective coolant, it must be low enough in viscosity to be immediately drawn into the advance gap vacuum, and at the same time it must be sufficiently viscous to adhere to the underside of the chip and to the body of the work and to be carried to the rubbing points. In addition, it must have sufficient film strength to withstand the several tons per square inch pressure between the deflected chip and the top of the tool, and between the rough surface of the work and the working face of the tool. As a lubricant,

its primary effect in the first case is to prevent abrasion of the top of the tool and in the second case to cause the working face of the tool to polish the cut surface instead of merely dragging upon it. In both cases the effect is to cut down the power requirement to a large degree.

The fact that no cutting oil is required on brass and iron is explained by the statement that these metals are self lubricating—the first because it contains lead and the second because it contains graphitic carbon. The evolution in cutting oils which has come about through increased machining speeds made possible by improved cutting materials, is traced out. In general, this has been in the direction of lower viscosity.

—STEEL 8-21-30

Rodmaking Process

A description of the Kinkora plant of the John A. Roebling's Sons Co., Trenton, N. J., by Charles Longenecker, in Blast Furnace and Steel Plant, August 1930, *p.* 1280, 4¾ *pp., 7 illusts.*

Acid and basic steel is made in 12 open hearths, converted into 4 x 4-inch billets and passed to an 18-inch continuous mill. Billets 2 x 2 inches from the latter mill are rolled into rods on a 14-stand mill and are reduced to small diameters on separate 9-inch mills.

—STEEL 8-21-30

Pressure Vessels

Roll and hammer process of fabricating forge welded pressure vessels at plant of American Welding Co., by Theodore R. Olive, in Chemical and Metallurgical Engineering, July 1930, *p.* 412, 4 *pp.*, 10 *illusts.*

The author points out that while welding is the oldest known way of permanently joining metals, it is still one of the most common methods and, in the case of chemical equipment at least, it is an ideal method. The development of modern roll welding is traced out from the primitive forge and hammer, through the work of Thomas Fitch Rowland at the Continental Iron Works in Brooklyn, N. Y., in the 80's, down to the water gas furnace and hydraulic roll process particularly considered in this article.

To illustrate the modern method, the fabrication of a car tank, 36 feet long and 85 inches in diameter from ¾-inch steel plate is followed through the plant at Carbondale, Pa. Among the processes described are: Preliminary tacking of seams by arc welding, roll welding of longitudinal seams under 39,000 pounds roll pressure, subsequent annealing and rerolling for soundness, reinforcing and pulling the manhole in the mid section of the tank, flaring and hammer welding operations in joining the sections, heading the tank, rerolling and final annealing of girth seams, and the 100-pound air and 500-pound water tests.

Manufacture of 1-ton dished head gas containers is also described, though not in such complete detail because the operations are neither as difficult nor as interesting as in the case of the car tanks.

—STEEL 8-21-30

PRODUCTION:

Alloy Cast Irons

Effects of additions of alloying elements to gray cast iron, by J. W. Donaldson, in Metallurgia, July 1930, *p.* 103, 1½ *pp.*

Exceptional qualities of alloy steels have led foundrymen to experiment with the addition of such elements as chromium, nickel, tungsten, molybdenum, vanadium, etc., to cast irons, investigations generally confined to determining the effect of small amounts of these elements, partly because of their high cost and partly because of difficulties experienced in melting and casting. Additions of nickel have been found to accelerate graphitization, reduce chill and refine the grain. Chromium has been found to increase strength and hardness to varying extents. Nickel and chromium together strengthen and refine the iron. Other elements have been investigated but little practical work has resulted due to the alloying difficulties encountered.

—STEEL 8-21-30

Hot Metal Handling

Economic waste of allowing blast furnace iron to cool off merely to permit transportation in pig form, with modern methods of avoiding this, by Walter de Fries, in Iron and Steel Engineer, June, p. 36, 2¼ *pp.*

In the beginning, the author points out that while steelmaking is a process of modern laboratory exactness, it is still handicapped by the traditional "two step" system of material handling, in many cases. The development of transporting and storing ladles for blast furnace iron, from the original 20 to 40-ton iron buckets, to spherical ladles holding the necessary 50 to 80 tons required by the open-hearth process, is traced out. The place of mixers in plants enforcing weekend shut-downs is explained. As a requirement for the successful transportation and storage of hot metal, cleanliness of handling is explained.

—STEEL 8-21-30

Malleable Iron

A comparison of various methods for melting malleable cast iron to produce hard white castings, by J. V. Murray, Part III of a series in Metallurgia, July 1930, *p.* 101, 2 *pp.*

Malleable iron melting is performed generally in three main types of furnaces, the crucible furnace, the cupola, and the open-hearth furnace. Supplementing these are the rotary furnace and the electric furnace, also the duplex and triplex methods. The crucible furnace is characterized by its limited capacity; the cupola method gives low cost, speed in melting and adaptability; the open hearth is slower, more expensive, but produces a high-grade metal. The electric furnace is probably the best type of melting furnace due to its close control; the rotary melting furnace is a recent introduction and is claimed to offer reduced fuel costs, and a high-grade metal due to continual agitation. Duplex and triplex methods, while often producing a superior grade of metal, are slow to be adopted generally because of excessive costs of operation.

—STEEL 8-21-30

Sheet Normalizing

Description of an automatic and continuous gas-fired furnace for normalizing steel sheets in Industrial Gas, August 1930, *p.* 16, 1½ *pp.*, 1 *illust.*

A modern type of gas-fired furnace for normalizing full finished sheets has been installed recently at the plant of the West Penn Steel Co., Brackenridge, Pa., the installation being 190 feet in length, including loading and unloading tables, and 15 feet in width. The article describes the furnace and its operation in detail. A disk-type continuous conveyor which, with its driving mechanism is supported independently of the furnace construction, is employed, the disks being mounted on water-cooled shafts rotated through a bevel gear drive. The furnace proper is of brick, the walls being 13½ inches thick, supported by 5/16-inch steel plates and buckstays set on 4-foot centers. The interior is divided into zones—a heating zone comprising four smaller zones, and a cooling or grain-growth control section.

—STEEL 8-21-30

Frank Foundries Corp., Davenport, Iowa, has increased its capital from $250,000 to $350,000.

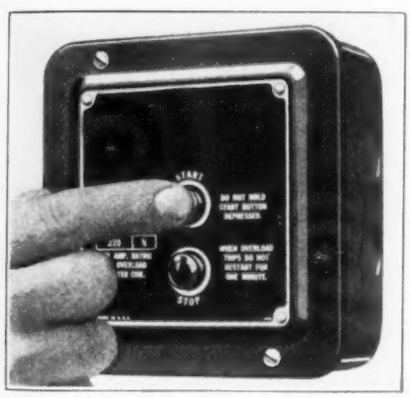
Machine Tools and Shop Equipment

"Without machine tools modern machinery could not be built."

—Joseph W. Roe

Resistor Starter Limits Inrush Current

Cutler-Hammer Inc., 13 Twelfth street, Milwaukee, announces a new resistor-type starter for fractional horsepower, direct-current and single-phase, alternating-current motors. This new starter, illustrated herewith, is designed for those applications in which power companies require that the inrush current of small motors connected to lighting circuits be held within definite limits, or applications in which the high inrush current incident to starting across the line is otherwise objectionable.



Resistor-type starter is designed for fractional-horsepower motors

On starting, a resistance is inserted in series with the motor. As the motor accelerates and the inrush current decreases, the starter automatically short-circuits the resistor, connecting the motor across-the-line. The starter is pushbutton operated and provides thermal overload protection to the motor. The overload relay acts directly on the contact mechanism. Small overloads and overloads of short duration do not trip the mechanism, the motor being disconnected only when it is in danger of burnout.

The enclosing case for this new starter is a standard double wiring box which can be mounted easily on the machine, on the wall, or at any other point convenient to the operator. The device also can be obtained without the enclosing case, for building into the pedestal or other part of a machine. Maximum ratings are; ¼ horsepower, 115 volts, direct current; and ¾ horsepower, 110 or 220 volts for alternating current installations.

◆

Small Size Manifolds Allow Several Welding Stations

Oxweld Acetylene Co., New York, has introduced an economical system of oxygen and acetylene distribution beneficial to small users. The small manifolds designed for this system allow for a piped supply of gases to a number of welding stations, even though the consumption of gases is too small to warrant the installation of an acetylene generator and a large oxygen manifold.

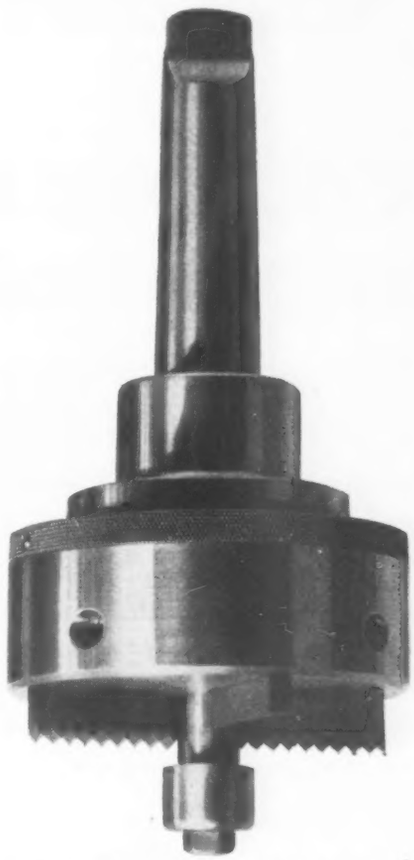
The six cylinder oxygen manifold of this style is a wall type and has the duplex feature of the larger manifolds, which permits three cylinders on one side to be changed while the bank of three on the opposite side maintains the supply of gas. The four cylinder acetylene mainfold is also of wall type, and each cylinder has a valve in the header so that each one is independent of the others. One, two, three or four cylinders can be used at once and cylinders can be changed without cutting off the gas supply. Each cylinder connection is fitted with an approved flash arrestor.

These new manifolds are particularly useful in welding schools. They permit a number of students to work at once, without requiring each student to have individual cylinders at his station.

◆

Rapid Facing of Bosses Is Done by Compound Tool

Mummert-Dixon Co., Hanover, Pa., has put on the market a compound spot facing tool which performs rapid roughing and accurate finishing of small bosses in a drill press. The accompanying illustration shows one of these tools with its movable serrated blades in forward or cutting position. This set of blades serves to break up the scale and remove the bulk of the excess metal rapidly in preparation for the final finishing. Following this operation the finishing cut is taken by a set of smooth blades which are solidly held in the head and which come into play only after the roughing blades are retracted by turning the knurled adjusting ring adjacent to the top face of the head.

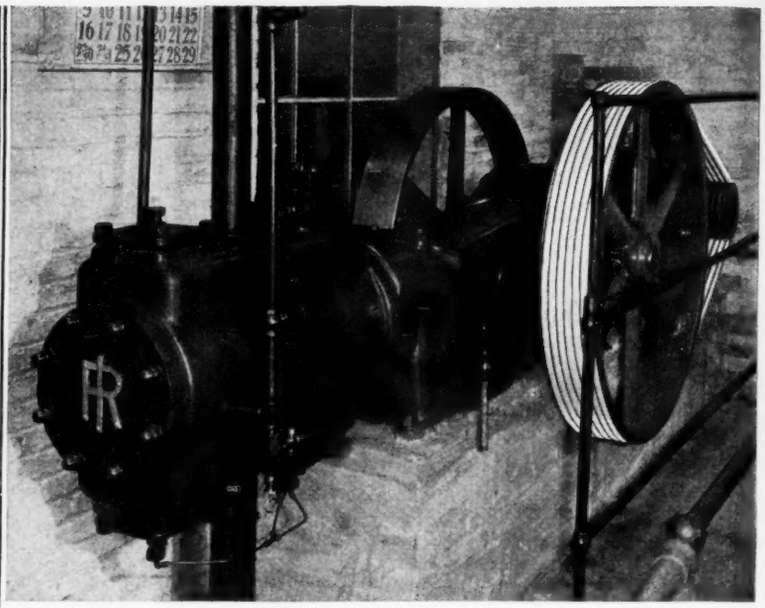


Compound spot finishing tool carries sets of roughing and finishing blades

The location of the edges of the roughing blades ahead of the finishing blades during roughing operations effectively protects the finishing edges from damage by scale. The finishing blades remain sharp for a long time, because they are called upon only to remove the shallow ridges left by the roughing blades in clean metal.

A pilot stem projects from the

Always Silent and Slipless



This Texrope Drive is in the plant of the Garton Toy Co., Sheboygan, Wis., driving an Ingersoll-Rand Compressor. Many manufacturers of power driven machinery are using Texrope Drives as standard equipment.

NO GREASE . . . NO OIL . . . CONTINUOUS OPERATION . . . EASY

STARTING . . . SHOCK-ABSORBING . . . LOW MAINTENANCE COST

Where moisture is ever present . . . where dust and dirt fill the air . . . These are the places where Texrope Drives prove their perfection most convincingly. Under the most adverse conditions . . . where other drives mean continual maintenance and repair . . . Texropes give steady service with practically no maintenance.

Texrope Drives require no grease, oil or dressing. Shut-downs due to transmission failure seldom occur when Texrope is used. Texrope belts are unusually long lived. They are made by the B. F. Goodrich Rubber Co. and are the result of over seven years development in correct design and manufacture.

The wedging contact between the belts and the V-grooved sheaves permits no slippage. Starting is smooth . . . there is no vibration . . . and the drive is always silent. One installation, on your hardest drive, will convince you.

ALLIS-CHALMERS MANUFACTURING CO. (*Texrope Division*)
MILWAUKEE *Specialists in Power Machinery Since 1846* **WISCONSIN**

Over 80,000 TEXROPE DRIVES *in Satisfactory Service!*

In approximately the last five years over 80,000 Texrope Drives have been installed. Unbelievable as it may seem, this drive has never failed to satisfy wherever it is correctly applied.

Few industrial products can claim such success. Truly, the trend is to Texrope Drives . . . in all parts of the country and in almost every industry.

Texrope gives you a short-center drive requiring least possible space. Stocks of belts and grooved sheaves up to 100 H. P. and in ratios up to 7:1 are carried at points that permit prompt shipment to any locality. Special drives up to 2,000 H. P. may be had promptly.

Let us show you how you save with Texrope Drives. Take a minute now to write for a copy of Bulletin 1228-K.

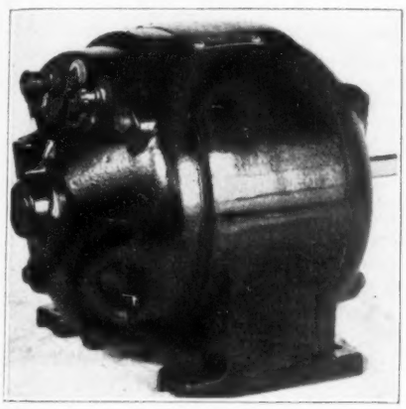
ORIGINATED BY ALLIS-CHALMERS

TEXROPE DRIVES

THE DRIVES THAT REVOLUTIONIZED TRANSMISSION PRACTICE • • •

center of the working face of the head, and on this can be placed properly sized thimbles for accurately guiding the tool by means of finished holes in the bosses. In case the hole in the boss is only rough cored, or is too large for a regular pilot, an auxiliary pilot post with a cup-shaped end is fastened to the drill press table so as to extend up through the center of the hole in the boss. The pilot on the tool is then guided by the hole in the pilot post cup, this accomplishing the same results as direct piloting in the work.

These spot facing tools are furnished in 2½, 4, 5, and 6-inch sizes, with standard Morse taper shanks. Standard blades are of high-speed steel, and a simple jig can be furnished to hold both roughing and finishing blades, by means of which correct grinding is assured.



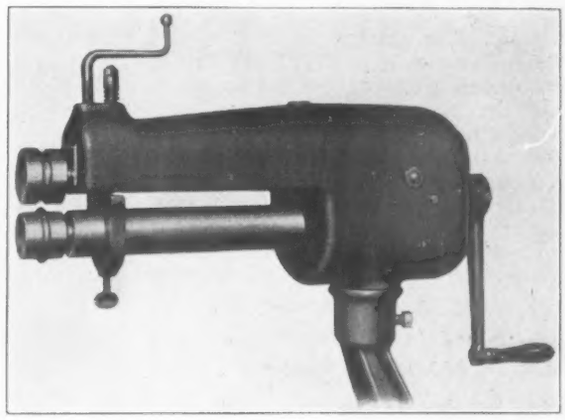
In starting, a series of strong power impulses are delivered by this motor

Small Clutch-Type Motor Has High Starting Torque

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., announces a new clutch-type motor of ¼ horsepower which runs at 1725 revolutions per minue. This motor, illustrated on this page, is a split-phase machine of high starting torque, the starting current being constant regardless of the load. It is especially suitable for the driving of small machinery such as pumps and compressors from 110-volt lighting circuits.

The clutch mechanism built into the unit allows the motor to deliver a series of strong power impulses when overcoming resistance of thick oil or high compression in starting a pump or compressor. These impulses increase in intensity until the resistance is overcome, or until 680 per cent full load torque is reached.

New beader will handle heavy-gage steel and its unusually deep throat permits operations to be carried on at a considerable distance from the edge of the work



Beader Is Geared to Handle Stock Up To 18 Gage

Niagara Machine & Tool Works, 637 Northland avenue, Buffalo, has placed on the market a beader which is geared to permit the easy handling of sheet steel up to 18 gage. The machine, shown in the accompanying illustration, has a particularly deep throat to permit beading at a considerable distance from the end of a pipe or similar work.

The frame is in one piece, designed to fully enclose all shafts and gears. The lower shaft is supported in a bronze bushing in a steel horn. This horn contains a generous oil pocket which supplies lubrication to the lower shaft. The upper shaft is carried in large, carefully fitted bearings and provisions are made for their easy lubrication. The upper shaft is raised and lowered by means of a crank screw.

All gears are cut, the pinion is steel, bronze bushed and the steel connection gears are so mounted as to be always in proper mesh regardless of the position of the upper shaft. Rolls are of case hardened steel, and as they are held in place by countersunk nuts, they are flush with the ends of the shafts. A large gage with polished face slides on the lower horn. It is held in desired location by a thumb screw.

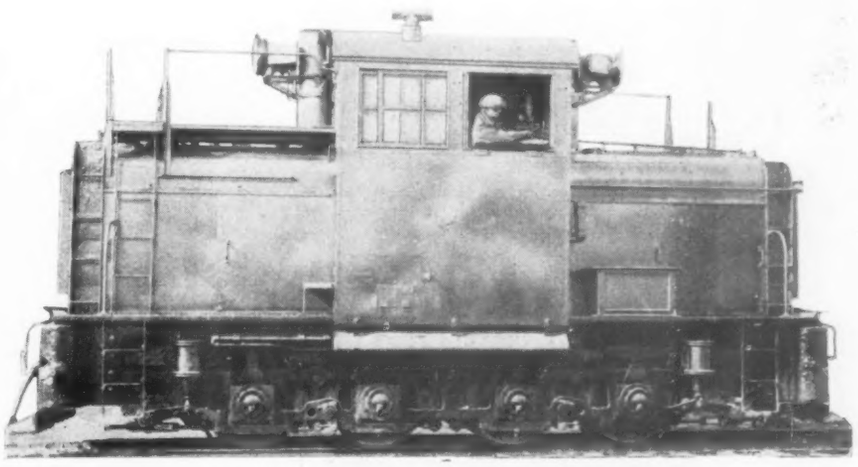
Standard equipment furnished with this beader is as follows: One pair of 1-inch Ogee beading rolls, one pair of ⅜-inch beading rolls, one large standard, and a wrench for the roll nuts.

◆

Oil-Electric Locomotive Has Industrial Uses

Geo. D. Whitcomb Co., Rochelle, Ill., announces developments in oil-electric locomotives for railroad and industrial plant short hauls and switching. The accompanying illustration shows an 80-ton 0-8-0 rigid wheel base locomotive of this type.

This locomotive is powered by two six-cylinder engines of 300 horsepower each, driving one main gene-



Eighty-ton oil-electric locomotive develops 600 horsepower and will give a starting pull of 48,000 pounds

rator, which in turn drives the wheels through four electric motors. The voltage employed is 600. The driving wheels are 38 inches in diameter and the journals are mounted on tapered roller bearings. The locomotive has an overall length of 29 feet 6 inches, overall height of 15 feet 2 inches, total weight of 160,000 pounds and maximum starting tractive effort of 48,000 pounds on standard rails.

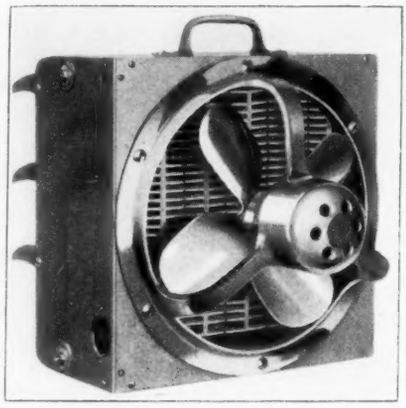
◆

Electrical Space Heater Has Many Uses

American Foundry Equipment Co. Mishawaka, Ind., recently has placed on the market a new type electric space heater to meet industrial and commercial heating needs. A rear view of one of these units is shown in the accompanying illustration. Construction is simple. Alloy heating strips are cast integral with composite fins of aluminum alloy resulting in a single smooth element that will allow an uninterrupted flow of air through its channels.

These elements then are assembled in suitable number and size into a cabinet, back of which a fan operates to circulate a current of air through the heated fins and out into the space where heat is desired.

The heater can be used for permanent installation or as a portable heating unit. It is particularly applicable for heating isolated and temporary buildings of every description, for intermittent heating needs in warm climates, for "off season" heating in temperate climates and for general heating of plants which generate their own power or whose power rate is low.



Electrical space heater solves many unusual heating problems

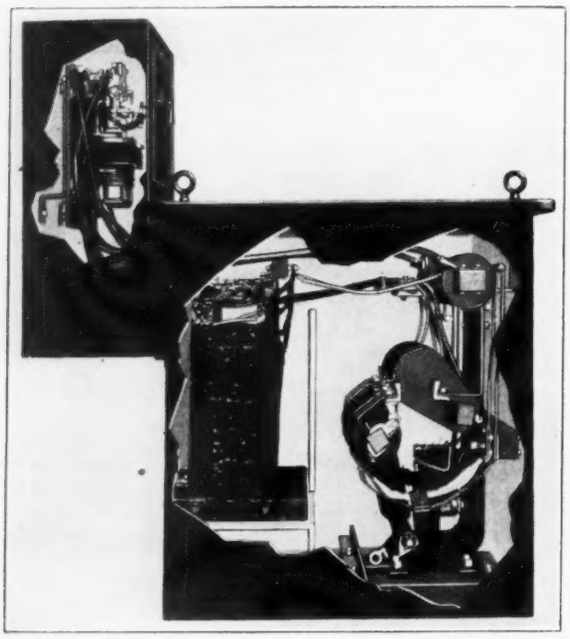
◆

Full Voltage Starter Is of Unique Design

Electric Controller & Mfg. Co., 2700 East Seventy-ninth street, Cleveland, O., announces a 2300-volt, full-voltage magnetic starter intended for across-the-line starting of squirrel cage and synchronous motors, also to control the primary of slipring motors. It is built for reversing, non-reversing, and plugging applications.

As the accompanying illustration indicates, this starter is different from the switchboard circuit breaker type commonly used for full voltage starting. The magnet armature, carrying the movable contact arm, is direct acting and is supported by a single large bearing pin. The entire unit is immersed in oil in a heavy welded steel tank, which insures perfect lubrication as well as dust and corrosion protection. Being flame proof, it can be mounted anywhere with perfect safety. Provision is made for grounding the tank or case, which removes the shock hazard.

The contacts open and close with a combined wiping and rolling action. They are duplicate and easily renewable. Control may be by master motor switch with low voltage release and high voltage protection, by float switch, pressure regulators, altitude regulators, etc. For use with synchronous motors an automatic field switching panel can be mounted in a cabinet attached to the side of the tank.



Rugged simplicity and several safety features mark this full voltage magnetic starter which operates across the line on 2300-volt circuit

◆

Clamshell Bucket Requires No Extra Wires

In a description of the new motor-operated power-arm type clamshell bucket manufactured by the Erie Steel Construction Co., Erie, Pa., which appeared on Page 85 of the Aug. 7 issue of STEEL, a misstatement was made in connection with the wiring arrangement. The incorrect statement was as follows: "The wiring is simplified, although additional wires are required when used on cranes with lifting magnets." This should have read: "The wiring is simplified, no additional wires being required when used on cranes with lifting magnets."

Plants in New England Open Doors to Visitors

New England manufacturers in large numbers are inviting travelers to visit their plants for the purpose of inspecting processes and products, according to the industrial committee of the New England council, 1032 Statler building, Boston. This type of hospitality serves to focus attention on New England products and the results are said to be of advantage to manufacturers of products sold directly to the public as well as manufacturers of products sold to other manufacturers.

This movement has resulted in a distinct increase in the number of attractive factory signs visible from main traveled highways and railroads.

Market Poised for Starter's Word

Some Signs Encouraging but Impetus Is Lacking—Structurals Hold High Rate—Operations Give Way Slightly — Automotive Needs Hold Off

QUICKENING of trade as it affects steel and iron markets is slow to manifest itself, but signs of renewed activity are appearing, albeit they are not marked nor important. In general, improvement is lacking. Little more can be said than that the market is marking time, ready to advance when conditions warrant, but remaining inactive for the present.

Sentiment has improved in many directions as some uncertainties have been removed and as time approaches for the usual larger buying of fall months. Whether this betterment in the feelings of producers and consumers is based on tangible foundations or a psychological state remains to be seen. Actual improvement is difficult to discern and only by cumulative observation of factors can change in position be seen.

Rain having visited portions of the drought areas in sufficient volume to minimize losses to crops and contracted buying power, this inimical factor will be of less consequence than was feared a fortnight ago. This is giving heart to agricultural implement builders, sellers of farm supplies and tin platemakers, who had feared the worst in continued drought.

Release of nearly $122,000,000 for federal aid in road building, which will carry an equal sum from the states, portends large expenditures, much of which will be for steel and for road-building equipment.

Steel scrap, usually a reliable indicator of impending change in market conditions, is stirring under the surface and giving signs of better conditions in steel. Need for scrap on the part of steelmakers is meeting scarcity and some advances in price. Until more steel is passing through industrial processes and yielding its discards these conditions will continue. Purchase of 10,000 tons of heavy steel at Pittsburgh caused 50 cents advance.

Placing of structural steel continues the most active feature of the entire industry. Award of 12,000 tons for a bridge at Cleveland, 6000 tons for an apartment house and 5000 tons for an office building at New York are high lights of the present week. A total of 50,000 tons is the largest since the week of July 17 when 56,000 tons were let, one of the high spots of the year.

While new buying of finished steel is lacking some releases of tonnage on old contracts are helping mills. It indicates need for more material on the part of consumers, though not sufficiently decided need to call for larger purchases.

Expected buying for automotive use continues a will-of-the-wisp and fails to materialize, although an occasional release or purchase keeps hope alive. Recent price reductions on the part of several automobile manufacturers indicate desire on their part to start the ball rolling. Sheets, awaiting improved demand for so long, have softened and strip prices have shown signs of weakness, though not really tested.

A matter of inspiration to fabricators in the Pittsburgh district is the likelihood of some 150 barges for river use being bought this fall. Refractory manufacturers find steelmakers are repairing their equipment during the dull period and larger demand for brick has brought August sales to a higher level than preceding months, though below that of 1929.

Reduction of 97 cents per ton in Middlesbrough pig iron, to the lowest point since the war, indicates the general condition of British and European markets. French steelmakers have formed a comptoir to supervise sales of finished steel products, in an effort to control the situation.

Operating rates are little changed from the previous week, a slight lowering at Youngstown and Cleveland affecting the general situation only a few points. Chicago and Pittsburgh are at 55 per cent, Cleveland 40 and Buffalo 59 per cent.

The market composite of STEEL remains unchanged from last week at $33, no essential movement in price being registered.

Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

This week (Aug. 20, 1930)	**$33.00**
Last week (Aug. 13, 1930)	**33.00**
One month ago (July, 1930)	**33.21**
Three months ago (May, 1930)	**33.73**
One year ago (Aug. 1929)	**36.54**
Ten years ago (Aug. 1920)	**68.87**

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Aug. 20, 1930	July, 1930	May, 1930	Aug., 1929
PIG IRON				
Bessemer, del, Pittsburgh	$20.26	20.46	20.76	20.76
Basic, valley	18.00	18.20	18.50	18.50
Basic, eastern del. eastern Pa.	18.25	18.00	18.75	19.85
No. 2 foundry, del. Pittsburgh	19.76	19.76	19.76	19.76
No. 2 foundry, Chicago	17.50	17.90	19.00	20.00
*Southern No. 2, Birmingham	14.00	14.00	14.00	14.00
**No. 2X, Virginia Furnace	18.25	18.25	18.25	20.00
**No. 2X, Eastern del. Phila.	19.76	20.26	20.26	22.26
Malleable, valley	18.50	18.70	19.00	19.00
Malleable, Chicago	17.50	17.90	19.00	20.00
Lake Superior, charcoal, del. Chi.	27.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	18.63	18.83	19.13	19.13
Ferromanganese, del. Pittsburgh	103.79	103.79	103.79	109.79
*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $12 to $13, Birmingham. **2.25 to 2.75 silicon.				
COKE				
Connellsville furnace, ovens	2.50	2.50	2.55	2.75
Connellsville foundry, ovens	3.50	3.50	3.50	3.75
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	31.00	31.00	32.20	35.00
*Sheet, bars, open-hearts, Pitts.	31.00	31.00	32.20	35.00
Billets, open-hearth, Pittsburgh	31.00	31.00	32.20	35.00
Wire rods, Pittsburgh	36.00	36.00	36.40	42.00

	Aug. 20, 1930	July, 1930	May, 1930	Aug., 1929
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.65	1.70	1.75	1.95
Steel bars, Chicago	1.75	1.80	1.85	2.05
Steel bars, Philadelphia	1.94	1.94	2.04	2.27
Iron bars, Chicago	1.75	1.90	1.90	2.05
Shapes, Pittsburgh	1.65	1.65	1.75	1.95
Shapes, Philadelphia	1.66½	1.67	1.77	2.06
Shapes, Chicago	1.75	1.75	1.85	2.05
Tank plates, Pittsburgh	1.65	1.65	1.75	1.95
Tank plates, Philadelphia	1.80½	1.86	1.91	2.15
Tank plates, Chicago	1.75	1.75	1.85	2.05
Sheets, blue anl., No. 13, Pitts.	2.15	2.15	2.15	2.20
Sheets, black, No. 24, Pitts.	2.45	2.55	2.55	2.85
Sheets, gal., No. 24, Pittsburgh	3.10	3.15	3.25	3.55
Sheets, black, No. 24, Chicago	2.60	2.70	2.70	3.10
Sheets, blue anl., No. 13, Chicago	2.30	2.30	2.35	2.50
Sheets, galvanized, No. 24, Chi.	3.20	3.35	3.35	3.80
Plain wire, Pittsburgh	2.30	2.30	2.35	2.50
Wire nails, Pittsburgh	2.05	2.10	2.15	2.60
Tin plate, per base box, Pitts.	5.25	5.25	5.25	5.35
SCRAP				
Heavy melting steel, Pitts.	15.50	14.90	15.40	18.90
Heavy melting steel, eastern Pa.	12.50	12.50	13.38	16.75
Heavy melting steel, Chicago	12.00	12.00	12.55	15.05
No. 1 wrought, eastern Pa.	14.25	14.25	15.38	16.25
No. 1 wrought, Chicago	11.25	11.25	12.70	15.40
Rails for rolling, Chicago	14.50	14.50	14.85	17.75

Sheets

Demand Continues Restricted—Prices of Some Grades Easier—Automotive Business Lacking

• SHEET PRICES, PAGE 71

Pittsburgh—Sheet tonnage continues in the light volume of the past several weeks. Requirements of practically all leading consumers have failed to broaden, demand from the automotive industry still being disappointing. Operations have declined moderately and currently average 45 to 50 per cent. Prices continue to show irregularity and are easier on some grades. Common black sheets usually are 2.45c, Pittsburgh, and although some business still is being taken at 2.55c, reports are heard of less. Galvanized usually are 3.10c to the consumer, with jobbers in some instances obtaining 3.05c and 3.00c. Blue annealed sheets are steady at 2.15c, but on 10-gage material 1.90c is becoming more prominent. This is due partly to increased competition on the part of plate mills which have gone to 10-gage material and in some cases to even lighter gage. Autobody remains 3.60c.

Youngstown, O.—Operating rates of independent sheet mills continue around 35 to 38 per cent. Sales are confined largely to the common grades. No encouragement has been received from many automotive interests, although Ford continues to take material and Buick appears also to be doing better. Furniture makers continue to take fairly satisfactory tonnages. Prices are steady.

New York—Efforts of sellers to firm up prices on blue annealed sheets and plates have met little success, the latter holding at 1.95c to 2.00c, Pittsburgh, and the former at 2.10c to 2.15c. Galvanized sheets are unchanged at 3.10c, Pittsburgh, and black sheets at 2.45c, with occasional shading. Buying is light.

Cleveland—Orders for sheets are scarce; releases are fewer than earlier in the month, and a few cancellations have been made. Autobody sheet users have not yet hit their stride and metal furniture orders are for small quantities. Users of enameling stock are entering their normal quiet period lasting about a month from Aug. 15. Some orders for black sheets have been accepted at 2.35c. Pittsburgh, from jobbers, users pay 2.45c. Other prices are unchanged. Parts makers for the Austin car are taking material at the rate of 150 to 200 cars per day for assembly at Butler, Pa.

Chicago—Sheet consumers have not increased commitments. The Southwest has been disappointing. With July the worst month in six years the August upward trend has been anything but steady. Last week's increase sheet production of 60 to 70 per cent contrasts with 55 to 60 per cent this week. The recent cut in galvanized sheets to 3.15c to 3.30c, mills, has not been followed with further recession. Other prices are unchanged.

Philadelphia—Sheet and strip demand is somewhat better but still lacks volume. Galvanized now are 3.00c to 3.05c, base, Pittsburgh. The blue annealed jobbing mill product still ranges from 1.90c to 2.00c on heavy gages and 2.05c to 2.15c on light gages. Competition from strip in widths up to 36 inches continues pronounced. Black sheets continue 2.45c, Pittsburgh, subject to occasional concessions on highly finished material taking large extras.

St. Louis—Demand for blue annealed and galvanized sheets continues to improve. Delivered St. Louis prices have been lowered to the following levels: No. 24 black, 2.805c; No. 10 blue annealed, 2.355c; No. 13 blue annealed, 2.505c, and galvanized 3.455c.

Cincinnati—Production at sheet mills in this district is at about 45 per cent, with some improvement noted during the past week, partly from automotive demand. Buyers are placing orders, only for spot shipments.

Buffalo—Failure of the automotive manufacturers to purchase sheets in anticipated quantities is holding sheet mill operations to 50 per cent.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

SHEET MILL BLACK, NO. 24

Pittsburgh base	2.45c to 2.55c
Detroit, delivered	2.76½c to 2.81½c
Philadelphia, delivered	2.74c
Gary, Indiana Harbor	2.55c
Chicago, delivered	2.60c
Birmingham, base	2.70c
St. Louis, del.	1.80½c

TIN MILL BLACK, NO. 28

Pittsburgh, base	2.70c to 2.80c
Gary, base	2.90c to 3.00c

GALVANIZED NO. 24

Pittsburgh, base	3.10c
Philadelphia, delivered	3.29c to 3.34c
Gary Indiana Harbor	3.15c to 3.20c
Chicago, delivered	3.20c to 3.25c
Birmingham base	3.30c
St. Louis, del.	3.45½c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base	2.15c
Chicago, district mills	2.25c
Chicago, delivered	2.30c
St. Louis, delivered	2.50½c
Philadelphia, delivered	2.34c to 2.44c
Birmingham	2.30c

BLUE ANNEALED PLATES, NO. 9-10

Pittsburgh, base	1.90c to 2.00c
Chicago, district mills	2.10c
Chicago, delivered	2.15c
Philadelphia, delivered	2.19c to 2.29c
St. Louis, delivered	2.35½c
Birmingham	2.15c

AUTOMOBILE NO. 20

Pittsburgh, base	3.60c
Detroit, delivered	3.86½c

FURNITURE NO. 24

Pittsburgh	3.70c

Tin and Terne Plate

Prices per 100-pound box Pittsburgh

Tin plate, coke base	$5.25

Gary, Ind., base 10 cents higher.

Long ternes, 24, primes	3.55c to 3.65c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

Standard wire nails	$2.05 and 2.15
Cement coated nails	2.05 and 2.15
Galvanized nails	4.05 and 4.15

(Per pound)

Polished staples	2.50c and 2.60c
Galvanized staples	2.75c and 2.85c
Barbed wire, gal.	2.70c and 2.80c
Annealed fence wire	2.20c and 2.30c
Galvanized wire	2.65c and 2.75c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.30c
Spring wire	3.30c
Wire, delivered Detroit	2.53½c
Nails, delivered Detroit	$2.38½

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Rivets

Struc. c.l., Pitts-Cleve.	2.75c
Struc. c.l., Chicago	2.85c
**7/16-inch and smaller, Pitts.	70, 10 and 5 off
Chi., Cleve.	70 to 70, 10 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Steel Plates

Pittsburgh, base	1.65c
Philadelphia, del.	1.80½c
New York, del.	1.88c
Boston, del.	2.05c
Chicago, base	1.75c to 1.80c
Cleveland, delivered	1.78½c to 1.88½c
Lackawanna, N. Y., base	1.80c
Birmingham, base	1.90c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	2.15c to 2.25c
St. Louis, del.	2.00½c
Detroit, del.	1.91½c to 1.96½c

Structural Shapes

Pittsburgh, base	1.65c
Philadelphia, del.	1.66½c to 1.70½c
New York, del.	1.75½c to 1.85½c
Boston, del.	1.88½c to 1.98½c
Chicago, base	1.75c to 1.80c
Cleveland, delivered	1.83½c to 1.88½c
Lackawanna, N. Y.	1.80c
Birmingham, base	1.90c
Pacific Coast, c.i.f.	2.25c
Detroit, del.	1.91½c to 1.96½c

Bars

SOFT STEEL

Pittsburgh, base	1.65c to 1.75c
Chicago, base	1.75c to 1.85c
Birmingham, base	1.90c
Lackawanna, N. Y., base	1.85c
Pacific Coast, c.i.f.	2.35c
Cleve. base, local mills	1.70c to 1.75c
Philadelphia, del.	1.94c
New York, delivered	1.98c to 2.08c
Boston, delivered	2.05c to 2.15c
Detroit, del.	1.91¼c
Pittsburgh, cold finish	1.80c to 1.90c
Pittsburgh, forg. qual.	1.90c to 2.00c

RAIL, STEEL

Chicago Heights	1.65c
Eastern mills	1.65c to 1.70c

IRON

Chicago, base	1.75c to 1.85c
New York, delivered	1.98c to 2.03c
Philadelphia, delivered	1.94c to 1.99c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.90c to 2.00c
Stock lengths, mill	1.65c to 1.75c
Chi. billet, over 500 tons	1.85c
30 to 200 tons	2.00c
Under 30 tons	2.45c to 2.85c
Chi., rail steel, over 30 tons	1.50c
Under 30 tons	2.10c to 2.50c
Philadelphia, cut lengths	2.04c to 2.09c

Cold-Finished Steel

Bars, Pitts., Chi., Buff.	2.10c
Cleveland	2.00c to 2.10c
Do. delivered, Detroit	2.20c
Shafting (turned, polished)	
Pitts., Buffalo	2.10c
Do. (turn., ground) mill	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets 35c; plates 31c; bars 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	22c	23.5c	26c	31c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	6.70 to 6.80 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bar Base is 2.65c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni.	1.05
2100	0.55	5100 .80-1.10	
2300	1.50	Cr.	0.45
2500	2.25	5100 Chr.	
3100	0.55	spring.	0.20
3200	1.35	6100 Bars	1.20
3300	3.80	6100 Spring	0.95
3400	3.20	Chr., Ni., Van.	1.50
4100 .25-.40		Carbon Van.	0.95
Mo.	0.70	9250 (flats)	0.25
4600 .20-.30 Mo.		9250 (rds., sq.)	0.50

Strip, Hoops, Bands

Hot strip, to 6-in., Pitts.	1.75c
Hot strip 6 1/16 to 24-in., Pitts.	1.65c
Hot strip, bands 6 in. and under, Chicago	1.90c
Do. 6 1/16 to 24 in.	1.80c
Cooperage hoop, Pitts.	1.90c to 2.00c
Do. Chicago	2.00c to 2.10c
Cold rolled strip., Pitts., Cleve., 3 tons, over	2.35c to 2.45c
Worcester, 3 tons, over	2.60c to 2.70c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 28.00
Light rails, 25-45, mills	$34.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.80c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.80c
Spikes boat, barge, Pitts.	3.00c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plates, mills	$41.50

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930 lists.

CARRIAGE BOLTS

All sizes, cut thread	73 off

Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.

Eagle list	73 off

MACHINE BOLTS

All sizes cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts	73 off
Tire bolts	60, 10 and 10 off

Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 10, 5, 2½ off in bulk.

Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished	73 off

***HEXAGON CAP SCREWS**

Milled	80-10-5 off
Upset 1 in. diam. and smaller	85-10 off

***SQUARE HEAD SET SCREWS**

Milled	85-5 off
Upset 1 in. and smaller	80-10-5 off

*Discounts dated Jan. 23, 1930.

Cut Nails, Chain, Piling

Cut nails, c.l., mills	2.45c
Do, less carloads	2.55c
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	2.00c to 2.10c

Bars

Small-Lot Buying Remains Feature—Prices Unchanged but Strength Is Lacking

BAR PRICES, PAGE 71

Chicago—There is little to feature the local bar market. Generally the same group of consumers are in evidence as in former weeks. Automobile makers have not opened up appreciably. Implement makers find most tonnage going into export business. Recent Russian orders fall in this category. Nash Motor Co. has shown advanced specifications, which are better than heretofore, but buying from the Detroit district reveals itself here as hand-to-mouth. Prices are without change, and 1.75c, mill, on soft steel bars is general.

New York—Steel bars are firm at 1.65c, Pittsburgh, with inquiry slightly better but little improvement in buying.

Philadelphia—Steel bar demand is slow and the price continues 1.65c, Pittsburgh, subject to occasional concessions.

Pittsburgh—Small-lot orders, the aggregate of which lacks improvement over the rate of preceding weeks, continue to characterize the steel bar market. Tonnage is holding its own but restricted automotive operations still are being felt keenly. The market generally is 1.65c, Pittsburgh, with higher prices obtained only occasionally.

Cleveland—Paucity of orders for soft steel bars never was more pronounced than at the moment. Mills need tonnage badly, being unable to accumulate sufficient orders for satisfactory rolling schedules. Notwithstanding these conditions the price is holding, 1.70c, Pittsburgh or Cleveland, being named by outside mills and 1.70c, Cleveland, by local mills for outside shipment and 1.75c, Cleveland, for local delivery. The outlook in automotive circles brightens slowly.

Low Prices Speed Program of Chicago World's Fair

Chicago—Plans to more than double the building program for this year of the Century of Progress exposition to be held in Chicago in 1933, are maturing. This is due to favorable building materials prices and low bids submitted on previous work. Some were 30 to 50 per cent under estimates. The world's fair management states that 12 buildings may be started before Jan. 1.

Contracts already have been let and construction started for the $300,000 administration building, and the $1,000,000 transportation and travel building. While much reinforcing bar tonnage had been expected in the Century of Progress construction, it is indicated now that relatively light tonnages will be used in each building.

Reprints of a paper by Foster Dee Snell, 130 Clinton street, Brooklyn, N. Y., discussing the generation of hydrogen sulphide for laboratory purposes, are available from the U. S. Stoneware Co., Akron, O.

Cuts Tractor Price $50

International Harvester Co., Chicago, announces a reduction of $50 in the price of its all-purpose tractor, to $825, f.o.b., Chicago. Several other tractor builders state they will not follow the downward revision at this time.

Warehouse Breaks Record

Philadelphia—The number of orders entered Aug. 6 by L. Norris Hall Inc., warehouse interest, Locust and Thirty-fifth streets, broke an 8-year record.

Plates

Tank and Pipe Requirements Continue Heavy—Barge Inquiry Larger—Price Up In East

PLATE PRICES, PAGE 71

Chicago—Plate mill operations, holding at 75 to 80 per cent, are one bright spot in the activity of heavier steel products. Output is buoyed by commitments of plate fabricators, such as the A. O. Smith Corp., Milwaukee, which is continuing in August at the same rate as July. During the latter month approximately 65,000 tons of plates, going into pipe, were released. Material for completing car orders has been specified in fairly good tonnages. There is pronounced activity in tank building with larger orders in the offing. The price is unchanged at 1.75c, mill.

New York—Plates have settled to a general level of 1.70c, Coatesville, Pa., some leading sellers marking down their quotations $1 a ton. Trading is featureless. It is believed that approximately 1000 tons of plates for freight cars for the Lehigh & New England will be placed shortly. Tank work is light.

A substantial tonnage of plates is expected to be placed shortly by Combustion Engineering Co. for water tube boilers for Brooklyn Edison Co., Brooklyn, N. Y. The boiler contract is said to be the largest ever placed and will be handled by the Chattanooga, Tenn., plant.

Philadelphia — Preliminary bids are to be opened Sept. 2 on two and four Grace Line boats, each requiring 6500 tons of steel, mainly plates. It is expected final action will be taken soon thereafter, in view of the award of a mail contract to W. R. Grace & Co.

The plate market here has declined $1 a ton and now is quoted 1.70c, base, Coatesville, which as usual continues subject to differentials on certain classes of tonnage. Eastern plate mills are operating at 40 to 55 per cent of capacity.

Pittsburgh—Little new plate tonnage is developing in this district. Barge builders have a fairly large volume of inquiry, some of which is expected to be closed in the near future, but current orders are light. Plate production for pipemaking purposes continues heavy for the larger sizes of lapwelded material. The market generally is 1.65c, Pittsburgh, with some lower figures noted in competitive districts.

Cleveland—Small orders for tank plates occasionally are placed, usually 30 to 40 tons. Firebox and other locomotive plates are in small demand. Toledo, O., is understood to contemplate the purchase of three elevated water storage tanks. Oil storage tank inquiries are scattered. Mills name 1.65c, Pittsburgh.

Contracts Placed

450 tons, plates and shapes, surge tank, Diablo power project, Seattle, to Commercial Boiler Works, Seattle.

300 tons, (sheet piling) bulkhead, Fisher Body Co., Seattle, to Jones & Laughlin Steel Corp., Pittsburgh.

70 tons, 30,000-gallon welded steel barge

for Richfield Oil Co., to Truss Weld Barge Co.

Contracts Pending

Unstated tonnage, with cast pipe, approximately 2000 tons, municipal water project, Anacortes, Wash.; bids Sept. 5.

Semifinished Steel Market Continues Quiet

Semifinished Prices, Page 82

Pittsburgh—Buyers of semifinished steel are indisposed to place large tonnages and current orders still are limited to small lots. Skelp is fairly active as the result of good business in certain sizes of lapweld pipe. Demand for forging billets reflects quietness in automotive operations. The market on rerolling billets, blooms and slabs is untested on large lots at $31, with wire rods bringing $36.

Philadelphia—Billet business is quiet. The market continues $31, base, Pittsburgh, for rerollers, and $36 for forging quality.

Chicago—Billet producers are loth to accumulate stocks, as are finishers. The price of $32 per ton, Chicago, for sheet bars, billets and slabs, is unchanged. Sheet rollers' lack of business is reflected in demand for sheet bars.

Cleveland—Demand for semifinished steel has been reduced slightly, and the leading merchant producer here has dropped the number of its active units from six to four, out of 14. Sheet bars, billets and slabs continue $31, base, Pittsburgh and Youngstown.

Cold-finished Steel Bar Shipments Heavier

Cold Finished Prices, Page 71

Pittsburgh—Cold-finished steel bars remain in a quiet market with recent demand reported slightly improved over activity of recent weeks. Shipments are moderately heavier than in July when automotive companies were entering a period of suspended operations, but new business is slow to increase. Requirements of other consuming industries reflect the quietness in general industry. The market is holding fairly well at 2.10c, Pittsburgh.

Cleveland—Small orders continue to be placed by users of cold-finished bars as they are needed. No real improvement is anticipated before the middle of September. So far as can be determined the 2.10c, Cleveland, price is firm.

Railroads

Rolling Equipment Slow—Rail Buying Dull—One Road Buys 15 Engines—305 Cars Up

TRACK MATERIAL PRICES, PAGE 71

Chicago—Several railroad budgets for 1931 are reported being prepared. Railroads in general, however, suffering a low freight and passenger carrying year, will not be in a hurry to pass next year's commitments. At present no rail purchases are noted and car makers report an extremely dull situation. Great Northern is doing nothing on its order for 9000 tons of rails in the Oregon district. Chicago Surface lines bought about 1000 tons of track fastenings from Illinois Steel Co. and Inland Steel Co. and placed a few hundred tons of street car rails with Lorain Steel Co. in the East. Chicago, Great Western railroad placed 15 heavy freight locomotives with Baldwin Locomotive Works.

New York—Action on 305 freight cars for Lehigh & New England is expected daily. Aside from this little of importance is pending in the eastern car market. Locomotive demand also remains quiet.

Cleveland—With specifications reaching mills on the Chesapeake & Ohio rail order, no additional business of this nature is expected to be placed by the Erie, Pere Marquette, Hocking Valley or other lines until October or November.

Birmingham, Ala.—Rail mill of Tennessee Coal, Iron & Railroad Co. and car works of Pullman Car & Mfg. Corp., Bessemer, Ala., are operating at about 50 per cent capacity. Rails for export are being produced. New business is reported fair and specifications have been received from domestic consumers. Further buying of cars is not expected until early fall.

Car Orders Placed

Board of Transportation, New York, four air dump cars to Magor Car Corp.

Elgin, Joliet & Eastern railroad, 300 flat cars and 250 gondolas. Work to be done in own shops.

Halley, Chisholm & Morris, Hinton, W. Va., 20 air dump cars, to Koppel Industrial Car & Equipment Co., Koppel, Pa.

Illinois Steel Co., five 100-ton flats, to American Car & Foundry Co., Chicago.

Locomotive Orders Placed

Chicago, Great Western, 15 heavy freight locomotives, to Baldwin Locomotive Works, Philadelphia.

Lehigh Valley, one locomotive, to Baldwin Locomotive Works, Philadelphia.

Car Orders Pending

American Smelting & Refining Co., 50 to 75 gondolas.

Lehigh & New England, 305 freight cars.

Locomotive Orders Pending

National of Mexico, 1 to 10 locomotives.

Rio Grande do Sul, 10 Garratt-type locomotives.

Rail Workers 10 Per Cent Fewer Than Last Year

The average number of railroad workers employed during June this year was 1,564,269, a decrease of 9.9 per cent from the number during the same month last year, according to the interstate commerce commission. The number engaged in April this year was 1,572,567.

Hourly earnings of all wage earners on Class I railroads in the United States averaged slightly over 64 cents in the fourth quarter of 1929, while average weekly earnings were $31.80, according to the National Industrial Conference board.

Average earnings per hour of all train and engine service labor amounted to 92 cents, and weekly earnings $48.13; skilled shop labor received slightly less than 80 cents per hour and $37.62 per week. Earnings of unskilled shop labor were nearly 38 cents per hour and $17.97 per week. Of the individual occupations of the train and engine service group for which the conference board has computed figures the highest average hourly earnings, about $1.59, were received by road passenger engineers; their average weekly arnings were $66.15. The smallest hourly earnings, a little over 72 cents, were recorded for road freight brakemen, and the lowest weekly earnings, $38.34 for yard firemen.

Hearings Start Aug. 20

Philadelphia—Archibald T. Johnson, Philadelphia lawyer, has been appointed master to hold hearings at the request of E. I. Herndon, receiver for Eastern Steel Co., with reference to the future of this company. The initial hearing is scheduled to be held here tomorrow.

Structural Shapes

Award Total Highest Since July 17—12,000-ton Bridge Leads — Important Apartments and Office Buildings Let—Price Situation Same

STRUCTURAL SHAPE PRICES, PAGE 71

New York — Structural steel awards for apartments continue heavy. New inquiry is brisk. Prices for fabricated material show no strength, competition forcing erected structural material down to low levels which stimulates closing. Plain material prices are steadier. Railroad bridge work for the Boston & Maine and Erie, 3100 tons, was placed with Phoenix Bridge Co. State highway bridges also are active. A 43-story office building, 5000 tons, was awarded as was 6000 tons for the New York hospital nurses' home and power house. Pier D, Erie railroad, Weehawken, N. J., went to American Bridge Co. and Truscon Steel Co., the former taking the shapes and the latter reinforcing steel, flooring and angles. Bids will be taken Sept. 11 on the United States assay office, New York, calling for about 2500 tons and several thousand tons will be required for Passaic river bridges at Paterson, N. J., bids on which will be taken Sept. 3. Nine bridge structures will be built on three routes, including approaches to the Hudson River bridge, Fort Lee side.

Boston—Shape awards totaled in excess of 4000 tons this past week. A better buyers' attitude is developing though many still are cautious. Many small projects are going ahead. The largest lettings involved four railroad bridges, 2100 tons, and Harvard university dormitories, 1400 tons.

Philadelphia—Structural lettings are quiet although a large amount of work is being figured. Plain shape demand continues slow and eastern shape mills operate 50 to 55 per cent. The market on plain standard material continues 1.60c to 1.65c, eastern mills, with lower done on large tonnages.

Buffalo—An order for 450 tons of structural for a Niagara county school has been placed with a Buffalo fabricator. Other business of larger size is lacking. Considerable inquiry is pending for early coverage.

Pittsburgh—Structural steel activity has declined in this district. Fabricators find few large projects in new inquiry. Operations against old orders are fairly steady and specifications for plain material are at a corresponding rate. The market usually is 1.65c, Pittsburgh, with lower prices occasionally heard.

Cleveland—Award to Mt. Vernon Bridge Co., Mt. Vernon, O., of the Central-Lorain bridge here, 12,000 tons, takes out of the market one of the largest shape tonnages of the year, so far as the local market is concerned. This went at $103.50 fabricated and erected. A number of smaller projects are up. The general contract for the Ohio Rubber Co. job at Willoughby, O., was awarded George A. Rutherford Co., instead of H. K. Ferguson Co., as previously announced. Bethlehem Steel Co. was awarded a 500-ton bridge for Woodland avenue by the Nickel Plate. Bids close Saturday of this week on the state office building, Columbus, O., 4500 tons.

Chicago—Many small jobs of under 100 tons each cannot swell the aggregate tonnage of the past week to show anything but the lowest weekly period in months, as far as awards go. Large jobs are keenly sought after, prices in some cases being cut below cost. The undesirability of many of the small jobs up for figuring adds to this tendency of shape fabricators to strive for the large projects. Many jobs are indefinitely pending. The price is unchanged at 1.75c, Chicago.

Birmingham — Fabricators here have received several specifications and active operations are noted. Southern Steel Works Co. has numerous small contracts, and Ingalls Iron Works Co. was awarded a bank job at Atlanta, Ga., 1150 tons. A 3300-ton pier job at New York city will bring much work to the Birmingham, Ala., and Roanoke, Va., shops of the Virginia Bridge & Iron Co.

Awards Compared

	Tons
Awards this week	**50,511**
Awards last week	**42,981**
Awards two weeks ago	**34,432**
Awards this week in 1929	**57,335**
Av. weekly awards, 1930	**35,726**
Av. weekly awards, 1929	**42,213**
Av. weekly awards, July	**37,137**
Tot. awards to date, 1929	**1,430,251**
Tot. awards to date, 1930	**1,214,698**

Contracts Placed

12,000 tons, Central-Lorain bridge, Cleveland, to Mt. Vernon Bridge Co., Mt. Vernon, O., on Aug. 16.

6000 tons, River apartments, Fifty-second and Fifty-third streets, New York, to A. E. Norton Inc., New York; James Stewart & Co., general contractor.

5000 tons, 43-story office building, Madison avenue, between Forty-ninth and Fiftieth streets, New York, to Levering & Garrigues Co., New York, Gresham Construction Co., general contractor.

3300 tons, facing, Lehigh Valley railroad pier, New York, to Virginia Bridge & Iron Co. divided between Birmingham, Ala., and Roanoke, Va., shops.

3000 tons, shapes, bars and miscellaneous steel, pier D, Erie railroad, Weehawken, N. J.; shapes to American Bridge Co., and remainder to Truscon Steel Co., Youngstown, O., Foley Bros. Inc., general contractor.

2500 tons, apartment, Amsterdam avenue and Eighty-sixth street, New York, to Paterson Bridge Co., Paterson, N. J.; Emanuel M. Krulewitch, builder.

2100 tons, four bascule bridges, Boston & Maine railroad, Boston, to Phoenix Bridge Co., Phoenixville, Pa.

1600 tons, Quadrangle buildings, Yale university, New Haven, Conn., to Shoemaker Bridge Co., Pottstown, Pa.; Marc Eidlitz & Son, general contractor.

1400 tons, 22-story commercial building, Seventh avenue and Thirtieth street, New York, to Harris Structural Steel Co., New York; Emory Roth, architect.

1400 tons, dormitory unit No. 3, Harvard university, Cambridge, Mass., to New England Structural Co., Boston.

1300 tons, Petroleum Tower building, Dallas, Tex., to Mosher Steel & Machinery Co., Dallas.

1300 tons, Thomas Jefferson hotel, Baltimore, to Lehigh Structural Steel Co., Allentown, Pa.

1150 tons, building, Citizens and Southern bank, Atlanta, Ga., to Ingalls Iron Works Co., Birmingham, Ala.

1000 tons, bank, Yonkers, N. Y., to Hinkle Iron Co., New York; William Katz, architect.

1000 tons, bridge, Erie railroad, to Phoenix Bridge Co., Phoenixville, Pa.

500 tons, 12-story building 305 East Sixty-third street, New York, to Taylor-Fichter Steel Construction Co., New York; Magoba Construction Co., general contractor.

500 tons, Woodland avenue bridge, Cleveland, Nickel Plate railroad, to Bethlehem Steel Co., Bethlehem, Pa.

450 tons, Niagara county school, to Buffalo Structural Steel Co., Buffalo.

450 tons, addition, Bank of Italy, San Francisco, to Judson-Pacific Co., San Francisco.

400 tons, car shop, Niles Center, Ill., to Hansell-Elcock Co., Chicago.

400 tons, subway, Santa Fe railroad, at Kansas City, Mo., to Kansas City Structural Steel Co., Kansas City, Mo.

370 tons, school addition, 124 Richmond Hill Circle, Queens, N. Y., to Harris Structural Steel Co., New York; Seaman Construction Co., general contractor.

300 tons, loft building, 318 West Forty-seventh street, New York, to Easton

Structural Steel Co., Easton, Pa.; Magoba Construction Co., general contractor.

250 tons, bar trusses, Hudson river bridge approaches, New York, to McClintic-Marshall Co.; Cornell Construction Co., general contractor.

250 tons, theater, Santa Barbara, Calif., to Consolidated Steel Corp., Los Angeles.

230 tons, L street bridge beams, Boston, to Bethlehem Steel Co., Bethlehem, Pa.

225 tons, Children's hospital addition, Boston, to Eastern Bridge & Structural Co., Worcester, Mass.

200 tons, factory, Roach Appleton Co., South Bend, Ind., to Indiana Bridge Co., Muncie, Ind.

200 tons, highway bridges, New York state, to American Bridge Co.

200 tons, track covering, Park avenue, New York, New York Central railroad, to American Bridge Co., New York.

200 tons, professional building, St. George, Staten Island, N. Y., to George A. Just Co., Long Island City, N. Y.; M. Shipiro & Son, contractors.

190 tons, specification No. 2126 for Los Angeles, to Pacific Iron & Steel Co., Los Angeles.

176 tons, apartment house, Reading, Pa., to Bethlehem Fabricators Inc., Bethlehem, Pa.

160 tons, boiler house, Pittsburgh, for Atlantic Refining Co., to Jones & Laughlin Steel Corp., Pittsburgh.

150 tons, state highway bridge, Deer Island Creek, Md., to American Bridge Co.

145 tons, Old Ladies' home, Cleveland, to Kilroy Structural Steel Co., Cleveland; Crowell & Little Construction Co., general contractor.

115 tons, bridge, Riverside, Calif., to Consolidated Steel Corp., Los Angeles.

100 tons, apartment, Fourteenth avenue and Forty-ninth street, Brooklyn, N. Y., to Gold Seal Iron Works, Brooklyn; John Ricca, architect.

100 tons, apartment, 1311 Lincoln road, Brooklyn, N. Y., to Simon Holland & Son Inc., Brooklyn; Cohn Bros., architects.

100 tons, warehouse, General Electric Co., Cleveland, to Republic Structural Iron Works, Cleveland; Sam W. Emerson, general contractor.

100 tons, Ralls sanitorium, Gadsden, Ala., to Ingalls Iron Works Co., Birmingham, Ala.

Contracts Pending

6500 tons, subway for electric terminal, St. Louis; general contract to Murch Bros.., St. Louis; bids in.

6000 tons, subway, Market street, Philadelphia; bids Sept. 5.

8000 tons, bridges over Ohio river at Evansville, Ind.; bids in 30 to 60 days.

3500 tons, plant, Ford Motor Co., Buffalo; revised bids due Aug. 19; Albert Kahn, Detroit, architect.

1600 tons, Museum of Art, Toledo, O.; general contract to A. Bentley & Sons Co., Toledo.

1500 tons, Medical Towers building, Philadelphia; George A. Fuller Co. low on general contract.

1400 tons, approach to outer drive bridge, Chicago.

1200 tons, extensions to elevated platforms, Chicago.

1200 tons, Love garage, Philadelphia.

1100 tons, post office and federal building, Wichita, Kans., general contract let to unnamed interest.

1000 tons or more, transmission towers, Ohio Edison Co., Akron, O.; bids to be asked soon.

900 tons, State highway bridge, Lehigh Gap, Pa.; Parker & Graham, New York, low bidders.

720 tons, Randolph street suburban station; bids in.

700 tons, apartment, 317 East Fiftieth street, New York.

600 tons, plant, Brunswick Radio Corp., Muskegon, Mich.

500 tons, highway bridges, West Virginia; general contracts awarded.

500 tons, Central street subway, Evanston, Ill.

500 tons, Cleveland Clinic; bids Aug. 28.

473 tons, Broadway subway, Tucson, Ariz.; general contract to R. H. Martin, Tucson.

400 tons, river rail terminal dock building, Peoria, Ill.

400 tons, junior high school building, Denver.

250 tons, Bai Hai temple, Wilmette, Ill.

250 tons, gymnasium, Valparaiso university, Valparaiso, Ind.

250 tons, plant, Ohio Rubber Co., Willoughby, O., general contract to George A. Rutherford Co., Cleveland, instead of H. K. Ferguson Co.

200 tons, county jail construction and cells, Cineola, N. Y.; J. D. Cosgrove, Glen Cove, N. Y. general contractor.

181 tons, building, Telling-Belle Vernon Co., Cleveland; bids in.

126 tons, Lorain county sanitarium; bids Aug. 20.

100 tons, overhead crossing, Humboldt County, Calif.; bids received.

100 tons, departmental building, Bowling Green, O.; general contract to Heisey & Beibolt Co., Van Wert, O.

Unstated tonnage, First section Locust street subway, Philadelphia; plans to come out in October are estimated to involve $5,000,000.

Concrete Bars

Lettings Expand with 2500-ton Plant Let in California —1000-ton Bridge Job Awarded in East — 1220 Tons Highway Work Pending in East, With Bridges

REINFORCING BAR PRICES, PAGE 71

New York—Concrete reinforcing bar prices, while steadier, continue weak. Some business is being done under 2.00c, New York, on stock lengths, or 1.65c, Pittsburgh, while 1.90c, Pittsburgh, is frequent on cut lengths. Bridge and roadwork buying holds fairly well. Most tonnage is for engineering projects. Truscon Steel Co. booked reinforcing steel for the Erie railroad pier in New Jersey through Foley Bros. Inc., general contractor. Concrete Steel Co. was awarded more than 700 tons for bridge and highway work.

Boston—Small orders continue to dominate the concrete bar market. A total of almost 200 tons was awarded last week. Several projects are directly ahead, including 600 tons for a biological laboratory at Cambridge.

Buffalo—Buffalo mills report a good volume of reinforcing bar orders pending. Coverage is comparatively light. Inquiry for 700 tons for a railroad terminal here is the largest out this week. Old inquiry is being covered slowly.

Pittsburgh—Concrete reinforcing bar demand is declining with current activity off moderately from that of July. Awards are light and confined to small individual lots while inquiry also involves only small jobs. The market on cut lengths of bars continues 1.90c with stock lengths usually 1.65c, Pittsburgh.

Cleveland—Before the week is out the order for 700 tons of concrete bars required for the Station road bridge at Brecksville, O., will probably be placed by Highway Construction Co., general contractor. An 8-story office building at Chester avenue and Ninth street for Acme Realty Co., will take a few hundred tons. Lehmann & Schmidt are architects. Other lettings involve small lots. Prices range from 1.65c to 1.70c, Cleveland.

Birmingham, Ala.—Buying is not active in concrete bars. Unfilled orders, however, still call for steady operations and shipments are regular. Connors Steel Co. reports an active movement in cotton ties as well as in concrete bars. Several projects recently bid upon are to be let this week.

Awards Compared

	Tons
Awards this week	**7,312**
Awards last week	**1,280**
Awards two weeks ago	**6,197**
Awards this week in 1929	**10,488**
Av. weekly awards, 1929	**5,849**
Av. weekly awards, 1930	**6,770**
Average weekly awards, July	**6,145**
Total awards to date, 1929	**216,262**
Total awards to date, 1930	**230,193**

Contracts Placed

2500 tons, plant, Ford Motor Co., Richmond, Calif., to Soule Steel Co., San Francisco.

1000 tons, tunnel and ramps, Hudson river bridge approaches, New York side, to McClintic-Marshall Co., Cornell Construction Co., general contractor.

420 tons, Sixth street viaduct, Los Angeles, to unstated interest.

415 tons, Washington street bridge, Los

(*Concluded on Page* 79)

Strip

Expected Improvement in Demand Fails—Prices Less Steady on Cold-Rolled

STRIP PRICES, PAGE 71

Pittsburgh—Improvement in demand for strip steel still is lacking and the outlook remains dull. Automotive companies are buying sparingly and improvement in strip activity awaits more active operations in the Detroit district. Strip mill operations are off slightly at 35 to 40 per cent for hot-rolled and 25 to 30 per cent for cold. Prices are slightly unsteady on cold-rolled material, with the market 2.35c to 2.45c. Hot strip is reported firmer than cold material at 1.75c, Pittsburgh, for narrow widths and 1.65c for wide strip.

Chicago—Hot and cold-rolled strip tonnages are moving slowly and the August rate of mill operations continues at the same pace as in July. Automotive releases on cold strip show no increase and cold mills are operating at about 35 per cent of capacity. Hot mill schedules show 50 per cent capacity engaged. Prices remain unchanged.

Cleveland—Cold strip buying is at low ebb. Some orders were taken for quick delivery at 2.35c, Cleveland, but 2.45c has not entirely disappeared. Some strip business was placed by parts makers for the Austin car. Hot strip in the wide sizes is unchanged at 1.65c, Pittsburgh, with 1.60c done occasionally. Narrow hot strip is 1.75c, Pittsburgh. Everything is wanted immediately, indicative of low stocks.

New York—Cold-rolled strip is holding at 2.35c to 2.40c, Pittsburgh, the inside figure applying to large tonnages. Hot strip is 1.65c to 1.70c, Pittsburgh, on wide and 1.75c to 1.80c, Pittsburgh on narrow. Trading is still sluggish.

Warehouse Trade Dull; Mills Compete in Tonnage

Warehouse Prices, Page 93

New York—Jobbers see little improvement in the light demand of recent weeks. Prices generally are unchanged.

Boston—New England warehouses continue to ship a good variety of materials, resulting from the development of small projects.

Buffalo—Warehouses report third quarter sales behind those of last year, but that August tonnage compares favorably with that of July.

Cincinnati—Jobbers' prices continue unchanged with sales showing little improvement over July.

Pittsburgh—Orders show better distribution but tonnage is light and unchanged and prices are unchanged.

St. Louis—Business of iron and steel warehouses has expanded moderately though volume is still substantially below this time last year. Seasonal demands from the south, notably for galvanized and blue annealed sheets, are being felt.

Chicago—Volumes moving are no worse than in July and if anything show some upturn. Consumers rely on warehouse deliveries and quick mill deliveries which are often competitive. Prices are unchanged.

Complete Hearing in Pittsburgh Rate Case

Testimony was completed on the protest of Pittsburgh steel producers and consumers against existing freight rates on short-haul shipments of iron and steel products at the hearing held at Harrisburg, Pa., last week. Both railroads and steel producers and consumers have completed their testimony, and the matter now awaits the decision of the Pennsylvania public service commission. The decision of this body is expected to be made within 60 days.

The Pittsburgh district protested against present rates which have been in effect since May 20 and which, because of the restricted switching area involved large increases in freight charges on shipments of finished steel products within a radius of 30 miles from Pittsburgh.

Bolt and Nut Demand Steady at Low Rate

Bolt, Nut, Rivet Prices, Page 71

Pittsburgh—Light demand for bolts, nuts and rivets continues. Business is fairly steady with little change from the July rate. Specifications from railroads have lagged following a slight pickup a short time ago. Prices are steady at 73 off for bolts and nuts and 2.70c, Pittsburgh, for large rivets. Operations continue 40 to 50 per cent.

New York—The past week has seen the placing of moderate orders of nuts and bolts by two railroads and, in general, demand appears a little better. However, no perceptible change is noted in operations, which range 45 to 50 per cent.

Cleveland—Some local nut and bolt producers are on a 40 per cent operating schedule, not realizing upon their intention to go to 50 to 60 per cent. Orders are not accumulating, buyers filling their prompt needs with small amounts. The 73 off list quotation prevails. The recent rivet price reduction did not bring any increase of business.

Chicago—Jobbers of bolts and nuts have low stocks, and producers' operations are at the recent rate of 40 to 45 per cent of capacity. Farm implement manufacturers, on the other hand, have large stocks and do not look for renewed activity much before the first of the year. Prices are unchanged but consumers seem to be awaiting a cut in price, apparently accounting for low stocks. However, the only recent price recession has been that to 2.85c, Chicago, in large rivets.

Operations Slightly Lower; Loss Is Not Important

Youngstown, O.—Steel mill operations are about 57 per cent of capacity. Departments making pipe are operating close to 70 per cent. Independents are operating 45 of 120 sheet mills. Strip production is about 50 per cent and tin plate 60 to 65 per cent. Independent bar mills are operating 55 per cent and those of the Steel corporation 60 per cent.

Pittsburgh—Ingot production continues at 55 per cent. Schedules of a number of finishing mills continue to decline. Sheets are off at 45 to 50, with tin plate slightly lower at 65 to 70. Strip output continues 35 to 40 and pipe 60 to 75.

Buffalo—Steelworks continue to operate at 59 per cent of open-hearth capacity.

Chicago—Operations are without change at about 55 per cent of capacity; 17 of 36 steelworks blast furnaces are active. Plate mills are running 75 to 80 per cent; sheet mills are 60 per cent active, off ten points from last week.

Cleveland—Loss of three open-hearth furnaces by local steel mills has reduced operating rates here to 40 per cent. This is by far the lowest rate encountered this year.

Birmingham, Ala.—Thirteen open-hearth furnaces are in operation and finishing mills are operating three to four days, the estimate on steel operations being around 60 per cent of capacity.

Concrete Awards

(*Concluded from Page 75*)

Angeles, to unstated interest.
400 tons, bridge and highway work, Bergen county, New Jersey, to Concrete Steel Co., Chicago.
350 tons, highway, Middletown, N. Y., to Concrete Steel Co., Chicago.
345 tons, grain elevator, South Chicago, Ill., to Inland Steel Co., Chicago.
325 tons, approach, George Westinghouse bridge, East McKeesport, Pa., to Truscon Steel Co., Youngstown, O.; M. H. Parish Inc., general contractor.
270 tons, sewer, Mamaroneck, N. Y., Westchester County Sanitary Sewer commission, to Joseph T. Ryerson & Son Co.
260 tons, highway sections 10 and 2, New Jersey, to Concrete Steel Co., Chicago.
250 tons hospital, Asbury Park, N. J., to Truscon Steel Co., Youngstown, O.; Walter Kidde Co., general contractor.
227 tons, highway work in San Diego county, Calif., to unstated interest.
200 tons, sewer, Torresdale, Philadelphia, to Taylor-Davis Inc., Philadelphia.
150 tons, superstructure, Lawson Y. M. C. A. memorial, Chicago, to Olney J. Dean Co., Chicago.
100 tons, telephone building, Greenfield, Mass., to Truscon Steel Co., Youngstown, O., through T. J. Glass Co., general contractor.
100 tons, theater, Santa Barbara, Calif., to unstated interest.

Contracts Pending

1220 tons, bridges and road work in New Jersey; bids Sept. 3.
800 tons, bridgework for Outer Drive, Chicago.
700 tons, Station road bridge, Brecksville, O.; Highway Construction Co., Cleveland, general contractor to purchase bars this week.
700 tons, produce terminal. New York Central railroad subsidiary, Buffalo; bids in.
600 tons, biological laboratory, Harvard university, Cambridge, Mass.
500 tons, Monroe street sewer, Chicago, Underground Construction Co., general contractor.
500 tons, 8-story office building, Acme Realty Co., Ninth street and Chester avenue, Cleveland; Lehmann & Schmidt, architects.
350 tons, office building, A. E. Larson, Yakima, Wash.; general contract to Hans Pederson, Seattle.
300 tons, hotel addition, Pasadena, Calif.; bids being received.
300 tons, apartment, 470 North Rossmore street, Los Angeles; bids being received.
277 tons, Broadway subway, Tucson, Ariz.; general contract to R. H. Martin, Tucson.
277 tons, bridge over San Gabriel river, Los Angeles county, Calif.; bids received.
204 tons, Hearthstone Home apartments, Fifty-eighth street and Blackstone avenue, Chicago.
200 tons, two dormitories, Harvard university, Cambridge, Mass.
200 tons, apartment, Crecent Heights boulevard, Los Angeles; bids being received.
150 tons, warehouse, Banning street, Los Angeles; bids being received.
150 tons, dam, Mayfield, Fulton county, N. Y.; bids Sept. 2.
100 tons or more, international house, University of Chicago, Chicago; bids Aug. 27.
100 tons, paving in Los Angeles county, Calif.; bids received.

Pipe

Seasonal Improvement Absent —Utility Buying Expected— 1480 Tons Bought in California

PIPE PRICES, PAGE 93

New York—Seasonal improvement in cast iron pipe demand is slow to develop. Several tentative inquiries by utilities are out, but such buying is expected to be light for second half. Prices generally are firm at $36 to $37, eastern foundry. Backlogs have been reduced. Bids will be taken Aug. 29 on 1100 feet of 54-inch cast pipe for a Mamaroneck, N. Y., sewer project. Inquiry for city of New York requirements has slumped. Clifton Springs and Canastota, N. Y., are inquiring for several hundred tons of 12 and 14-inch pipe. A. P. Smith Mfg. Co., East Orange, N. J., has been awarded contract for valves and hydrants by Philadelphia to the value of about $62,000.

Boston—Except for some private cast pipe business placed last week, awards are scarce. Enough inquiry is out to indicate early improvement. This and the fact that foundries are well booked ahead holds prices firm at $36 to $37, foundry.

Pittsburgh—Pipe is in a quiet market as regards new business. No awards are reported on the several line pipe projects pending while demand for smaller diameters of tubuproducts continues restricted. Standard pipe is slightly more active than a month ago but still is seasonally dull. Demand for oil country material is spotty with no improvement noted in mechanical tubing and locomotive and boiler tubes. Mill operations continue 60 to 75 per cent.

Cleveland—Merchant steel pipe orders are confined to small filling-in tonnages on the part of jobbers to maintain buttweld stocks. Lapweld orders are scarce, small ones being occasionally placed by oil and gas companies and mill supply houses.

Chicago—Cast pipe awards are almost entirely lacking. Several municipal tonnages are to be awarded within the next 10 days. Tonnages are moving to contractors at a fairly good pace but generally are small and often of an undesirable character. Prices are unchanged. Central Public Service Corp. is preparing to place approximately 275 miles of steel pipe line of large diameter for natural gas from the Kentucky fields to Northern Indiana.

Birmingham, Ala.—Several cast pipe lettings recently were reported but the aggregate does not equal output. Shipments are active. The base price of $37 to $38 on 6-inch and larger continues unchanged. Winter demands are expected to be entirely favorable.

Contracts Placed

2000 tons, 24-inch and smaller cast pipe for Dayton, O., to United States Pipe & Foundry Co., East Burlington, N. J.
1480 tons, 30-inch class C cast pipe for Santa Monica, Calif., to C. G. Claussen & Co. Inc., San Francisco.
122 tons, 2 and 4-inch class 150 cast pipe for Cloverdale, Calif., to J. J. Ongaro Jr., Fairfax, Calif.

Contracts Pending

1500 tons, 16, 20, 24 and 30-inch cast pipe, sizes to be determined later, for Toledo, O.; bids Aug. 19.
861 tons, 8 to 24-inch cast pipe, for Minneapolis; bids Aug. 21.
783 tons, 6 to 12-inch class 250 cast pipe for Glendale, Calif.; bids received.
436 tons, 16-inch class B cast pipe for Beverly Hills, Calif.; bids Sept. 8.
377 tons, class A, mostly 12-inch cast iron pipe for Clifton Springs, N. Y.; general contractor bids in.
301 tons, 4 to 8-inch class C cast pipe improvement La Jolla, street, San Diego, Calif., bids opened.
189 tons, 2 to 8-inch Class C cast pipe improvement Fifty-fourth street, San Diego, Calif.; bids Sept. 2.
135 tons, 4, 6 and 16-inch cast pipe for Fond du Lac, Wis.; bids Aug. 20.
100 tons, 12 and 16-inch cast iron pipe for Bronx, N. Y., department of water supply, gas and electricity, contractors' letting; bids, Aug. 26.
64 tons, 30-inch for Chicago; bids Aug. 22.
Unstated tonnage, 1100 feet, 54-inch cast iron pipe, sewer, section M Mamaroneck project, Westchester county sanitary sewer commission, New York; bids Aug. 29.
Unstated tonnage, 2000 feet of 12-inch, and 3000 feet of 14-inch cast iron pipe for Canastota, N. Y.; also one 2,000,000-gallon steel standpipe; bids Aug. 26.
Unstated tonnage, 1600 feet 24-inch for Minneapolis; bids close Aug. 22.

Ohio Foundry Group Holds Sectional Conference

About 100 members and guests of the Ohio Foundries association participated in the third quarterly sectional conference at the Sinton hotel, Cincinnati, Aug. 15, at which principal topics were the characteristics of synthetic molding sand and problems facing the various branches of the foundry industry. M. J. Dundeck, Eastern Clay Products Inc., Buffalo, spoke on the use of clay bonds in molding sands.

Four group conferences were held,

From a stock of 20,000,000

IT is hardly necessary to point out that a stock of *twenty million* Cleveland Cap Screws would not be maintained at all times unless there was a constantly growing demand for them. A stock so large represents a heavy investment—and must be turned over regularly to show a profit in manufacturing.

This stock of twenty million Cleveland Cap Screws is on hand, ready for shipment, at our own six warehouses and the factory. It is packed in cartons and in kegs, for immediate delivery. It represents a full list of sizes, S. A. E. and U. S. S. threads. All of these fine cap screws are made by the Kaufman Method, *patented*, a development of our own.

THE CLEVELAND CAP SCREW COMPANY
2934 E. 79th St., Cleveland, Ohio
Address the Nearest Company Warehouse—Complete stocks at

CHICAGO, 726 W. Washington Blvd.
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LOS ANGELES . . . 224 E. 11 Street

CLEVELAND CAP SCREWS

these being devoted to gray iron, steel, nonferrous and pattern making. Internal shrinkage and segregation furnished a topic for considerable discussion in the gray iron group; the steel foundry group considered melting practice, relative costs of the arc and induction-type electric furnaces, and business conditions; the pattern makers discussed ways and means for preventing the manufacture of patterns unfitted for use in the foundry. The next sectional conference will be held in conjunction with the annual meeting of the association in October.

Structural Orders Lower

New orders for fabricated steel in July, as compiled by the department of commerce, showed a slight decline from the June figure and those of preceding months. Comparisons are as follows:

1929	Tonnage	Computed tonnage	Shipments computed tonnage
July*	292,478	350,350	304,150
Total (7 mos.)	1,889,502	2,263,800	1,998,150
Aug.*	301,964	361,900	338,800
Sept.*	264,056	315,700	315,700
Oct.*	282,973	338,800	350,350
Nov.*	187,760	227,150	284,900
Dec.*	263,498	315,700	265,650
Total (year)	3,189,753	3,823,050	3,553,550
1930			
Jan.*	212,105	252,000	244,000
Feb.*	237,066	284,000	*300,000
March*	208,650	248,000	280,000
April*	196,153	233,000	*300,000
May*	242,951	296,000	*284,000
June**	180,035	264,000	304,000
July**	211,555	284,000	304,000
Total (7 mos.)	1,535,954	1,876,000	2,008,000

*Revised.
**Preliminary.

Plant To Be Auctioned

New York—Land, buildings, machinery and equipment of Syracuse Perfection Castings Inc., successor to Smith Wheel Inc., Syracuse, N. Y., will be offered at public auction sale Tuesday, Aug. 26, by the Industrial Plants Corp., 25 Church street, New York.

Indian Iron Imported

Philadelphia—Imports at this port during the week ending Aug. 16 included 2770 tons of pig iron from British India; one ton of drill steel from Sweden and 20 tons of structural shapes from Germany.

Paul Threadless Bolt Co., Lansing, Mich., has changed its capital from $25,000 to 5000 shares no par value.

Wire

Sentiment Better and Some Increase in Orders Is Felt—Prices Have Steadier Tone

WIRE PRICES, PAGE 71

Pittsburgh—Wire orders gained moderately during the past week and with prices showing a tendency to become more stable at current levels producers view the outlook with more hope. Recent demand in some cases represented an accumulation of orders over several weeks and automotive requirements still are light. Nails show a steadier tone at $2.05 to jobbers although occasional reports are heard in some districts of lower prices. Plain wire continues 2.30c with wire rods $36. Fencing material as yet has not suffered materially as the result of crop damage and a good movement from southern warehouses is reported by local producers.

Worcester, Mass.—Keen competition continues for wire business. Production is at about 50 per cent, however, and August shipments are holding to the schedule of the past few months. Plain bright wire to dealers is firm at 2.40c, base, Worcester.

Cleveland—Orders for wire and wire nails are at the low point of the summer. The recent drought acted as a further check on demand. Jobber turnover is less rapid. Some jobbers can buy nails at $2.05, Cleveland, but users are paying $2.15. The wire price is firm at 2.30c, Cleveland. Automobile companies are expected to increase specifications shortly for spring wire.

Chicago—With no improvement except in sentiment mills have not changed schedule. Wire mills are operating at about 40 per cent of capacity. Fencing and country goods, while at an ordinarily dull season of the year, look to a little change for the better with fall jobber purchasing.

Tin Plate Shipments to Canmakers Continue Steady

Tin Plate Prices, Page 71

Pittsburgh—With substantial holdups on shipments of tin plate to leading canmakers lacking, producers are inclined to believe that reports of curtailed vegetable packs as the result of the recent drought have been exaggerated. Tin mill operations are off slightly at 65 to 70 per cent but shipments are fairly well maintained. Reports of crop damages still are incomplete and although a moderate reduction in packs of tomatoes and sweet corn is looked for, the net reduction in all packs, it is believed, will be small. Operations of some mills continue irregular, with complete shutdowns interposed with periods of full operations. Tin plate continues $5.25 per base box.

More Factory Workers Receive Vacations with Pay

Vacations for industrial employes have been more general this year than ever before, according to reports from various states. Many factory employes have received vacations with pay for the first time, some employers preferring to reward those of long continuous service, rather than lay them off during a period of slow operations. The New York state department of labor reports factories which never have closed before have given their employes vacations of one to three weeks.

Factory employment in New York state decreased 4 per cent between June 15 and July 15. The index number for July was 93.3 compared with 100.4 in October, 1929. The monthly average for 1925-27 is 100. Those factories which ordinarily take on workers at this time are gaining slowly, while those usually reducing their forces show more than the average rate of decline.

Middletown Plants Win Safety Trophies

East works and Central works, Middletown, O., plants of the American Rolling Mill Co., won first prizes for safety records in the first half of 1930, an annual contest conducted by the National Safety council. East works, entered in Group A, metal section, including steel plants employing more than 1000 men, was first in that division. The men had a record of only five accidents and a frequency of 1.31 for 2900 men and 3,796,114 manhours during the six months. Central works, in the division employing less than 1000 men, had no accidents. Each plant is awarded a bronze plaque.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$17.50 to 18.00
Pittsburgh, district fur.	18.50
Pittsburgh, delivered	19.13 to 19.63
Valley, furnace	18.00
Cleveland fur., local del.	18.00
Philadelphia, delivered	19.26 to 19.76
Virginia, furnace	17.75
Granite City, Ill., fur.	18.00 to 18.50
Buffalo, fur., local del.	18.50
Buffalo, del. Boston	21.41 to 21.91
Buff., all-rail Brooklyn	20.91 to 21.41
Buff., all-rail, Newark	19.28 to 19.78
Ala., Bir. fur., local del.	14 00
Alabama, del. Chicago	18.01
Alabama, del. St. Louis	17.42
Alabama, del. Cincinnati	16.19 to 17.19
Alabama, del. Cleveland	18.51 to 19.01
Ala., Phila., dock del.	17.25 to 18.25
Ala., Balt., dock del.	17.00 to 18.00
Alabama, New York dock	17.50 to 18.00
Ala., Boston dock del.	20 21
Tenn., Bir. base, local del.	14.00
Tennessee, del. Cin.	16.19 to 17.19
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	19.00
Buff., all-rail, Brooklyn	21.41 to 21.91
Buffalo, all-rail, Newark	19.78 to 20.28
Buffalo, del. Boston	21.91 to 22.41
Virginia furnace	18.25
Eastern, del., Phila.	19.76 to 20.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	20.00
Eastern, del., Phila.	20.26 to 20.76

MALLEABLE

Chicago, furnace	17.50 to 18.00
Cleveland fur., local del.	18.00
Pittsburgh district fur.	19.00
Pittsburgh, delivered	19.63 to 20.13
Valley furnace	18.50
Buffalo fur., local del.	19.00
Eastern Penna., delivered	19.26 to 20.91
Granite City, Ill., fur.	18.00 to 18.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh dist. fur.	18.50
Pittsburgh, delivered	19.13 to 19.63
Eastern Penn., del.	18.00 to 18.50
Buffalo fur., local del.	18.00
Montreal, delivered	22.50
Valley furnace	18.00

BESSEMBER

Valley furnace	18.50
Pittsburgh, delivered	20.26

LOW PHOS

Valley fur., standard	27.00
Philadelphia, standard	24.26 to 24.76
Furnace, copper-bearing	23.00 to 23.50

GRAY FORGE

Pittsburgh district fur.	18.00
Pittsburgh, delivered	18.63 to 19.13

CHARCOAL

Lake Superior, del. Chicago	27.04

SILVERY

Jackson County, O., fur., in per cents

5—$21.50; 6—$21.50; 7—$22.00; 8—$22.50 to $23.00; 9—$23.00 to $24.00; 10—$23.50 to $27.00; 11—$24.50 to $28.00; 12—$25.50 to $30.00; 13—$26.50 to $32.00.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents

10—$29; 11—$31; 12—$33; 13—$35; 14—$37; 15—$39; 16—$42; 17—$45.

Coke

Prices Per Net Tons

Beehive Ovens

Connellsville furnace	$2.50 to 2.60
Connellsville foundry	3.50 to 4.85
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England, del.	11.00
St. Louis, del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ov., Connell. basis	5.50
Portsmouth, O. ov., Connell. basis	5.50
Buffalo ovens	8.00 to 8.50
Detroit ovens	8.50
Philadelphia, del.	9.00

Iron Ore

LAKE SUPERIOR ORE

Gross Ton, 51½%, Lower Lake Ports	
Old range	$4.80
Mesabi	4.65
Old range	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58.65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	10.50 to 11.00
North African low phosphorus	10.50
Swedish basic, 65%	9.50 to 10.50
Swedish low phos.	11.00
Spanish, North African basic, 50 to 60%	9.50 to 10.00
Newfoundland fdy., 55%	9.00
Tungsten, spot and future short ton unit, duty paid	$11.75 to 12.00
Chrome ore, 48%, net ton c.i.f.	$21.50 to 22.50

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55%	27 to 28 cents
Indian, 48-50%	27 to 28 cents
Brazilian, 46-48%	25 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$43.00
Georgia, Alabama	40.00 to 47.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	35.00 to 38.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham, Ala.	50.00 to 51.00

MAGNESITE BRICK

Per net ton

9 x 4½ x 2½	65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore base	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$31.00
Pittsburgh, bessemer	31.00
Youngstown	31.00
Cleveland	31.00
Philadelphia	36.30
Chicago	32.00
Forging, Chicago	37.00
Forging, Pittsburgh	36.00
Forgings, Philadelphia	41.30

SHEET BARS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00
Chicago	32.00

SLABS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00

WIRE RODS

Pittsburgh, Cleveland	$36.00
Chicago	37.00

SKELP

All grades, Pittsburgh	1.70c to 1.75c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$99.00
*Ferromanganese, del. Pittsburgh	103.79
Spiegeleisen, 19-21%, domestic fur. spot†	33.00
*Ferrosilicon, 50 per cent, freight all., c. l.	83.50
*Do, less carload	88.50
Do, 75 per cent	13.00 to 15.00
Ferrochrome, 66-70 chromium, 4-6 carbon. cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.10
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	160.00
Do., one ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton, carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50

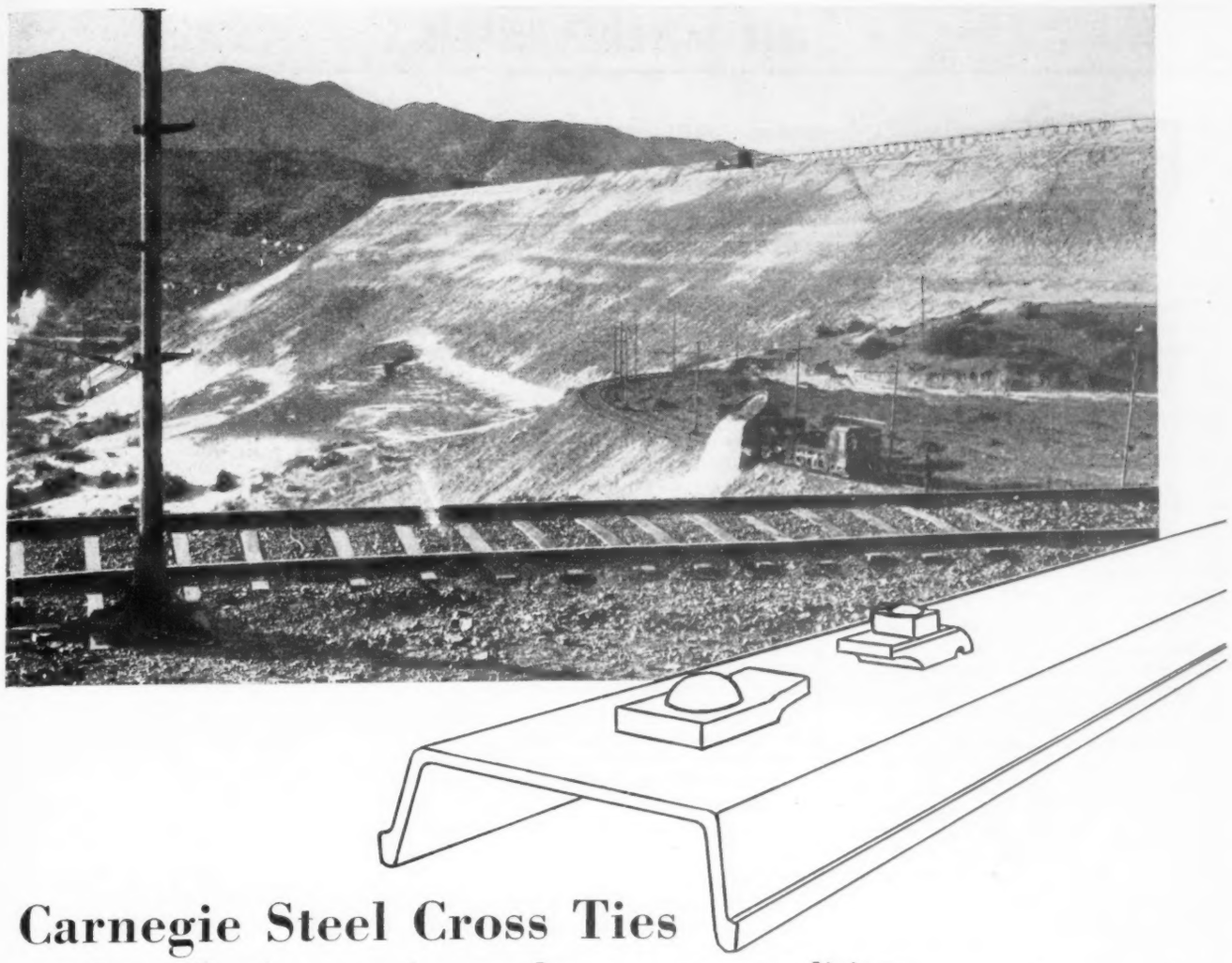
†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, import duty paid east, tide, gross ton	19.50



Carnegie Steel Cross Ties

render effective service under severe conditions -:- -:-

Molten slag spilled from ladles soon destroys wood ties. The International Smelting Company, on their slag dump at Miami, Arizona, efficiently solved their track problem by using Carnegie Steel Cross Ties. Two 10-foot lengths of Section M-25, an I-beam type, were used to support each trolley pole. The balance of the ties are channel section M-27, illustrated above. These ties were put in service ten years ago. Today they are still in excellent condition.

Carnegie Steel Cross Ties are suitable for many uses—yard tracks, sidings, dumps, ash pits, etc. They are easily and quickly laid or removed. Made of steel, they effectively resist damage from hot cinders or slags. Economical, as they outlast wood ties a number of times and effect a considerable saving in labor.

Carnegie Steel Cross Ties are provided in a number of weights and designs for all types of portable and permanent track.

Descriptive booklet will be sent at your request.

CARNEGIE STEEL COMPANY -:- PITTSBURGH, PA.

Subsidiary of United States Steel Corporation

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CARNEGIE
STEEL CROSS TIES

Pig Iron

Consumers Still Buying in Small Lots—Prices Steady—Valley Operations Reduced

PIG IRON PRICES, PAGE 82

Pittsburgh—Business in the pig iron market fails to improve. Sales continue limited to occasional small lots for current needs, with consumption at a low level. Inquiry still is lacking, reflecting quiet demand. The Davison Coke & Iron Co. has banked its Neville island stack, placing all four furnaces of this company on the inactive list, and leaving only one Shenango stack active among the strictly merchant producers in the Pittsburgh and valley districts. Prices are not tested and are unchanged.

Boston—The market is quiet, with the week's sales by all interests in New England not over 1000 tons. No change in prices is noted.

New York—Approximately 5000 tons of pig iron has been closed here. Inquiries aggregate 1500 to 2000 tons and include 500 tons, equally of No. 2X and No. 1X for the Buffalo plant of the Worthington Pump & Machinery Corp. This consumer is reported to have closed on a similar tonnage of foundry iron for its Cincinnati plant. Buffalo foundry iron continues $16 to $16.50, base, with most tonnage going at the lower figure. Southern foundry is easier at $17.50 to $18, delivered New York docks.

Buffalo—Orders for pig iron show some improvement, due principally to the closing of a large portion of a 2000-ton inquiry by the General Electric Co. with Buffalo producers. It is reported this and other business was taken at $15, base, furnace, for shipment outside the district. The district price is firm at $18.50. All orders amounted to 5000

Cleveland—New sales of pig iron continue at the slow rate noted for several months, the tonnage booked by furnace interests with headquarters in Cleveland having decreased slightly in the past week to 13,000 tons. Most orders are small lots for prompt shipments. The daily rate of shipments is ahead of that of July. Foundry iron continues $18, base, Cleveland, for local delivery. While lake furnaces quote $17, base, in competitive territory, instances continue where silicon differentials are waived or portions of freight rates are absorbed.

Chicago—Pig iron shipments show considerable gain over July. Farm implement makers are operating at a high level, though this is probably temporary, until export orders are filled. Ford, Nash and Studebaker automobile plants are on better schedules. The market for boat iron is featureless, except a shipment of 1050 tons of low phosphorus iron, the greater part to Milwaukee, and the remainder to Chicago. Chicago furnace prices are steady. Southern iron continues weak.

Philadelphia—Sales of pig iron are slow. The largest inquiry is for 2000 tons of low phosphorus iron for a western Pennsylvania melter. Prices are steady.

Cincinnati—Spot sales of pig iron during the past week totaled about 2000 tons, including 500 tons of northern foundry iron to a Michigan melter. No inquiries for tonnage are pending except one for 2000 tons of foundry iron, previously reported.

Toronto, Ont.—Pig iron buying is limited to small, spot lots. Prices are unchanged.

Birmingham, Ala.—A few sales of pig iron have been closed in the Middle West at more liberal concessions than heretofore. The price for delivery in this territory, however, remains $14, base, furnace. Stocks are increasing.

St. Louis—New orders and shipments of pig iron are at the lowest point noted so far this year. About 1200 tons was closed in this district in the past week. Prices are unchanged.

Ferroalloy Shipments Remain Seasonally Light

Ferroalloy Prices, Page 82

New York—Movement of ferromanganese continues to reflect reduced operations at steel mills. Prices are unchanged at $99, duty paid, tidewater, on lots of carloads to 500 tons annually. Domestic spiegeleisen, 19 to 21 per cent, continues $33, furnace, subject to differentials on quantities larger than carloads.

Pittsburgh—Shipments of ferroalloys remain slow, little change being noted from the rate of the preceding several weeks except in ferromanganese. The movement of the latter is reported slightly heavier in some directions but still is seasonally light, with the market continuing $103.79, delivered, for small lots. Ferrotungsten is dull and shipments of ferrosilicon and ferrovanadium continue at the low level of the past month. Prices on special ferroalloys are unchanged.

Refractory Sales Increase But Total Is Small

Refractories Prices, Page 82

Pittsburgh—Refractory sales have increased moderately so far in August over the dull situation of June and July. Demand remains well below the rate a year ago but for some producers is the best in three months. Sales of brick for new construction in the steel industry is light, most of the material for work now under way having been placed. Repair work is heavier, however, with additional relinings of blast furnaces and stoves pending and in prospect. Carnegie Steel Co. is repairing several of its stacks at various plants and the Wheeling Steel Corp. is doing similar work at Steubenville. Refractory brick prices are steady and unchanged at $43 for first quality fire clay and silica brick. These prices have prevailed for several years.

Iron Ore Consumption Drops; Market Quiet

Iron Ore Prices, Page 82

Cleveland—Interest in the iron ore industry is limited mainly to shipments, consumers having covered requirements for the season. Consumption in July dropped 450,904 tons from that of June, according to the Lake Superior Iron Ore association's current report which follows:

	Tons
Ore consumed in June	4,288,471
Ore consumed in July	3,837,567
Decrease in July.....	450,904
Ore consumed in July, 1929	5,808,473
Ore at furnaces Aug. 1, 1930	25,492,899
Ore on Lake Erie docks Aug. 1, 1930	5,022,538
Total at furnaces and Lake Erie docks Aug. 1, 1930	30,515,437
Total Aug. 1, 1929.....	28,697,239

Interests identified with Oglebay, Norton & Co. have acquired property on the Menominee range and are drilling it with a view to development. They have formed the Westlake Mining Co.

Wages of National Cash Register Co. workmen at Dayton, O., and Newark, N. J., have been reduced 10 per cent.

Scrap

Scarcity Causes Advance on Round Tonnage at Pittsburgh—Demand Absent at Most Points

Chicago—Quotations on steel and iron scrap are purely nominal, no essential change having been made since mid-July. Consumer interest is lacking and test from this source is not offered. Dealers covering obligations find it difficult to obtain tonnage as industrial scrap is scarce and railroad offerings are smaller than usual. Buying at prices to give a profit on contracts is practically impossible. Prices in other consuming centers offer no outlet from here. Dealers expect no important buying this month.

New York—Local scrap dealers' buying prices are generally unchanged. Only in mixed borings and turnings is there a slight reduction, this grade now holding $4, New York. Fresh consuming demand

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

HEAVY MELTING STEEL

Birmingham	10.50 to 12.00
Boston dealers	8.50 to 9.00
Buffalo, No. 1	13.00 to 13.50
Buffalo, No. 2	11.00 to 11.50
Chicago	12.00 to 12.25
Cinci., deal.	11.25 to 11.75
Cleve., No. 1	12.00 to 12.25
Cleve., No. 2	11.25 to 11.50
Det., No. 1 deal	11.00 to 11.50
Det., No. 2 deal	9.50 to 10.00
E. Pa. del. mill	12.50
N. Y. del. R. R.	9.00 to 10.00
N. Y. deal No. 2	6.25 to 6.75
N. Y., deal yd.	6.00 to 6.50
Pitts. No. 1	15.00 to 15.75
St. L. No. 1 sel.	11.50 to 12.00
Federal, Ill.	10.75 to 11.25
Granite C., Ill.	10.00 to 10.25
Valleys, No. 1	15.00 to 15.50

COMPRESSED SHEETS

Buffalo, dealers	11.25 to 11.50
Chicago	10.25 to 10.75
Cleveland	11.50
Detroit, dealers	11.00 to 11.50
E. Pa. new mat.	11.50
Pittsburgh	14.75 to 15.25
Valleys	14.50 to 15.00

BUNDLED SHEETS

Buffalo	9.00 to 9.50
Cinti., deal.	9.75 to 10.25
Cleveland	9.00 to 9.25
Eastern Pa.	9.50 to 10.00
Pittsburgh	13.50 to 14.00
St. Louis	6.50 to 7.00

SHEET CLIPPINGS LOOSE

Chicago	7.50 to 8.00
Cincinnati	7.75 to 8.25
Detroit, dealers	8.00 to 8.50
St. Louis	6.50 to 7.00

STEEL RAILS SHORT

Birmingham	11.00 to 12.00
Boston, dealers	7.50 to 8.75
Buffalo	16.25 to 16.75
Chicago (3 ft.)	13.50 to 14.00
Chicago (2 ft.)	14.00 to 14.50
Cinti. deal.	17.00 to 17.50
Detroit, deal.	15.00 to 15.50
Pitts. (open-hearth, 3 ft. and less)	17.50 to 18.00
St. Louis	14.00 to 14.50

STOVE PLATE

Birmingham	10.00 to 11.00
Boston, con.	8.50 to 9.00
Buffalo	10.25 to 10.50
Chicago, net	9.50 to 10.00
Cinci., deal. net	7.00 to 7.50
Det., net, deal.	9.00 to 9.50
Eastern Pa.	10.00
N. Y., deal. mill	6.00
St. Louis	9.00 to 9.50

COUPLERS, SPRINGS

Buffalo	16.00 to 16.50
Chicago	13.50 to 14.00
Eastern Pa.	17.00 to 17.50
Pittsburgh	17.50 to 18.00
St. Louis	12.50 to 13.00

ANGLE BARS—STEEL

Chicago	13.00 to 13.50
St. Louis	11.00 to 11.25

LOW PHOSPHORUS

Buf., billets and bloom crops.	17.50 to 18.00
Cleve. bil. and bloom crops.	17.50
Eastern Pa.	17.50 to 18.00
Pitts. billet and bloom crops	19.50 to 20.50
Pitts. sheet bar crops	18.00 to 18.50

FROGS, SWITCHES

Chicago	13.00 to 13.50
St. Louis	11.50 to 12.00

SHOVELING STEEL

Chicago	12.00 to 12.25
Cleveland	8.75 to 9.00
St. Louis	10.75 to 11.00

RAILROAD WROUGHT

Birmingham	10.00 to 10.50
Boston, dealers	7.50 to 8.00
Buffalo, No. 1	10.00 to 10.50
Buffalo, No. 2	13.50 to 14.00
Chicago, No. 1	11.25 to 11.75
Chicago, No. 2	12.00 to 12.25
Cinti., No. 2	11.25 to 11.75
Eastern Pa.	14.00 to 14.50
N. Y., No. 1 dl.	10.00 to 10.50
Pitts. No. 2	15.00 to 15.75
St. Louis, No. 1	9.00 to 9.50
St. Louis, No. 2	11.00 to 11.50

SPECIFICATION PIPE

Boston	6.50 to 7.00
Eastern Pa.	12.00
N. Y., deal	7.25 to 7.50

BUSHELING

Buffalo, No. 1	11.25 to 12.50
Chicago, No. 1	9.50 to 10.00
Cinn., No. 1 dl.	9.25 to 9.75
Cinn., No. 2	6.25 to 6.75
Cleve., No. 2	8.25 to 8.50
Detroit, No. 1 new deal.	9.50 to 10.00
St. L. No. 1	9.00 to 9.50
Val. new No. 1	13.25 to 13.50

MACHINE TURNINGS

Birmingham	7.50 to 8.50
Boston, dealers	4.00 to 4.35
Buffalo	8.75 to 9.25
Chicago	6.25 to 6.75
Cinn., deal	7.50 to 8.00
Cleveland	7.00 to 8.00
Detroit	5.75 to 6.25
Eastern Pa.	9.00
N. Y., deal	5.00 to 5.50
Pittsburgh	8.00 to 8.50
St. Louis	6.75 to 7.25
Valleys	10.50 to 11.00

BORINGS AND TURNINGS For Blast Furnace Use

Boston, deal.	3.50 to 4.00
Buffalo	9.25 to 9.75
Cinn., deal.	7.75 to 8.25
Cleveland	8.75 to 9.00
Detroit, deal.	6.25 to 6.75
Eastern Pa.	7.00 to 8.50
N. Y., deal.	4.00
Pittsburgh	8.50 to 9.00

CAST IRON BORINGS

Birming, chem.	12.00 to 13.00
Birming, plain	7.50 to 8.50
Boston, chem.	9.00 to 9.25
Boston, deal.	4.00 to 4.35
Buffalo	9.25 to 9.75
Chicago	7.75 to 8.25
Cinn., deal.	7.75 to 8.25
Cleveland	8.75 to 9.00
Detroit, deal.	6.25 to 6.75
Eastern Pa.	8.50 to 9.00
E. Pa. chem.	14.00 to 14.50
N. Y., deal.	4.50
Pittsburgh	8.50 to 9.00
St. Louis	9.25 to 9.50

PIPE AND FLUES

Cinn., deal	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	9.25 to 9.75
Chicago, net	8.50 to 9.00
Cincinnati	8.50 to 9.00
Eastern Pa.	10.50
N. Y., deal.	6.50 to 7.00
St. Louis	10.00 to 10.25

FORGE FLASHINGS

Boston, deal	7.25 to 7.60
Buffalo	11.00 to 11.50
Cleve. ov. 10 in.	10.00 to 10.50
Detroit	9.50 to 10.00

FORGE SCRAP

Boston, deal.	6.00 to 6.50
Chicago	14.50 to 15.00
Eastern Pa.	12.00

ARCH BARS, TRANSOMS

Chicago, net	13.00 to 13.50
St. Louis	14.00 to 14.50

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	11.50 to 12.00
Chi. steelworks	9.50 to 10.00
Cleveland	11.75 to 12.00
Eastern Pa.	11.50 to 12.00
Pittsburgh	12.50 to 13.00
St. Louis	9.25 to 9.75

STEEL CAR AXLES

Birmingham	19.00 to 20.00
Bos., ship. pt.	16.00 to 17.00
Buffalo	16.00 to 16.50
Chicago	16.80 to 17.35
Eastern Pa.	21.00 to 21.50
St. Louis	16.00 to 16.50

SHAFTING

Bost., ship pt.	13.00 to 15.00
Chicago	16.25 to 16.80
Eastern Pa.	18.50
N. Y., deal.	13.00 to 14.00
St. Louis	13.00 to 13.50

CAR WHEELS

Birming., iron	10.00 to 11.00
Boston, iron	14.00 to 14.50
Buffalo, iron	13.50 to 14.00
Buffalo, steel	16.00 to 16.50
Chicago, iron	13.50 to 14.00
Chi., roll steel	14.50 to 15.00
Cincinnati	12.00 to 12.50
Pitts., iron	15.00 to 15.50
Pitts., steel	17.50 to 18.00
St. Louis iron	12.00 to 12.50
St. Louis, steel	14.00 to 14.50
E. Pa. steel	16.75 to 17.00
E. Pa. iron	14.50 to 15.00

NO. 1 CAST SCRAP

Birming., cup	12.00 to 13.00
Buffalo (mac.)	12.50 to 13.00
Boston, textile	11.50 to 12.00
Chicago, mach.	13.45 to 14.00
Chi., railroad	11.20 to 11.75
Chicago, agri.	10.90 to 11.50
Cinn., mach. cup., gross	17.75 to 18.25
Cleve. cupola	13.50 to 14.00
Det., net deal.	10.00 to 10.50
E. Pa. cupola	13.50
N. Y. cup. deal.	9.50 to 9.75
N. Y., del. loc. foundries	14.00
Pitts. cupola	14.00 to 14.50
San Fran., del.	13.50 to 14.00
Seattle	14.00 to 14.25
St. L. No. 1 ma.	11.50 to 12.00
St. L. No. 1	10.50 to 11.00

HEAVY CAST

Boston	10.50 to 11.00
Bos. Mach. cast	13.50 to 14.00
Buffalo, break.	8.50 to 9.00
Cleve., break	8.50 to 9.00
Detroit, auto, net deal.	11.50 to 12.00
Det., break., dl.	7.00 to 7.50
Eastern Pa.	11.50 to 12.00
N. Y. No 1 dl.	8.00 to 8.50
N. Y. break. dl.	7.25 to 8.10
Pittsburgh	11.50 to 12.00

MALLEABLE

Boston, R. R.	15.00 to 15.50
Buffalo	15.00 to 15.50
Chicago, agri.	11.75 to 12.25
Chicago, R. R.	13.50 to 14.00
Cinn., R. R. dl.	15.00 to 15.50
Cinn., agri., dl.	14.25 to 14.75
Cleve., rail	15.50 to 16.00
Det. auto deal.	13.50 to 14.00
St. Louis, rail.	10.00 to 10.50

RAILS FOR ROLLING 5 feet and over

Birming. cup	12.00 to 12.50
Boston	9.00 to 9.50
Buffalo	13.50 to 14.00
Chicago	14.50 to 15.00
Eastern Pa	13.00 to 13.50
New York	9.50 to 10.00
St. Louis	12.50 to 13.00

LOCOMOTIVE TIRES

Chicago, cut	15.00 to 15.50
St. L. No. 1	13.00 to 13.50

LOW PHOS. PUNCHINGS

Chicago	13.00 to 13.50
Pittsburgh	17.50 to 18.00
Eastern Pa.	17.00 to 18.00
Buffalo	17.00 to 17.50

Economy

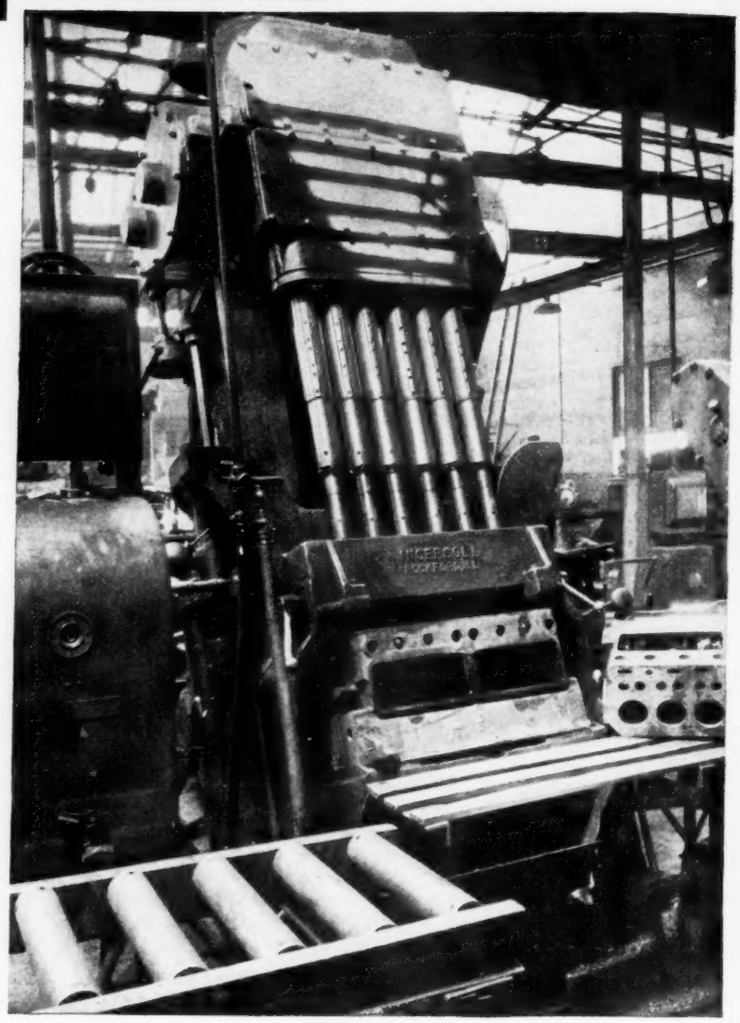
WITH ALLOY STEELS AND IRONS

THE decided trend toward the use of Alloy Steels and Irons in equipment and products is marked throughout the industrial field. The superiority of these metals over carbon steel and iron parts is particularly noted where improved physical properties are necessary factors.

Economical operation is assured through the uninterrupted production to be obtained with plant units of Alloy Steels and Irons. They stand up longer under increased operating speeds and heavier loads.

Lower manufacturing costs are assured through the greater workability which may be had from Ferro-Alloys.

Let Electromet engineers explain how small amounts of chromium, manganese or vanadium added to steel and iron provide increased resistance to abrasion, shock, impact, corrosion and fatigue.



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Carbide and Carbon Building, 30 East 42nd Street
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We will exhibit National Metal Exhibition, Stevens Hotel, Chicago, September 22-26, 1930

Electromet
Ferro-Alloys & Metals

continues light, although some fairly substantial tonnage of steel is moving on contracts, particularly to Buffalo.

Buffalo—Scrap markets continue depressed by large receipts by lake and barge canal. These incoming tonnages, from both eastern and western sources, are holding down Buffalo prices to marked degree. Some of the purchases have been made outside the district for direct shipment. Deliveries are being made on contracts but no new business of large size is reported this week, and many prices continue largely nominal.

Pittsburgh—Heavy melting steel has been advanced 50 cents per ton on a sale of 10,000 tons to a large consumer in this district at $15.75 and a smaller tonnage by another interest at $15, leaving this grade quotable at $15 to $15.75. Scrap rails are up a similar amount. Blast furnace material is quiet and slightly easier. Offerings of quality scrap are restricted despite recent dullness in demand.

Philadelphia—Somewhat more activity is reflected in steel and iron scrap. A further small tonnage of No. 1 melting steel sold at $12.50, delivered and several lots of No. 2 at $10.50 to $11, delivered. A large consumer again is offering $14.50, delivered, for chemical borings. Current sales also include moderate lots of some other grades.

Cleveland—The market for iron and steel scrap repeats the inactivity of the past few weeks. Larger consuming interests are virtually out of the market in new buying and shipments against contracts. Demand from foundries is confined to a few specialty grades. Limited buying is being done for shipment to the valleys and also for laying down when advantageous prices can be obtained. The market undertone is firm here and in the Valley. Quotations are unchanged.

Cincinnati — Quotations on rails and other heavy scrap steel, although unchanged, became firmer here on reports of prices paid on recent railroad lists. The market remains dull with no new orders of size.

St. Louis—Iron and steel scrap has developed a slightly firmer tone, due principally to the activities of dealers. The belief prevails among the middlemen that prices are unduly low, and they prefer to purchase and lay down material rather than sell. Another element is the fact that certain grades are scarce, and efforts to secure these for delivery on contracts has resulted in a stiffening of prices. There has been some scattered buying by melters, mainly small lots for immediate use.

Birmingham, Ala.—No change has taken place in the market for iron and steel scrap and weakness of price continues.

Toronto, Ont.—Iron and steel scrap sales continue dull, mostly for small tonnage spot needs, and no future contracts were reported for the week. Mills are taking in small lots of special steel grades, but otherwise the market is featureless.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$15.00
Steel axles	13.00
Car wheels	11.00
Stove plate	10.00
Wrought pipe	5.00
Turnings	6.00
Heavy melting steel	8.00

TORONTO

Steel axles	10.00
Iron axles	12.00
Heavy melting steel	9.00
Turnings	6.50
No. 1 mach. cast (net)	11.00
Malleable (net)	9.00

Cravath for Recognition

New York—Paul D. Cravath, corporation lawyer and counsel for Bethlehem Steel Co. in various actions, advocated adjustment of claims between the United States and Russia and an early discussion of the basis for resuming diplomatic relations, in speaking at the Institute of Politics at Williamstown, Mass., recently.

Coke

Connellsville Production Continues Curtailed — Shipments Light—Prices Are Easy

COKE PRICES, PAGE 82

Pittsburgh—Demand for beehive coke and production remain at a low level. Shipments to blast furnaces are limited and spot sales are dull. Producers have adjusted output to requirements and any improvement in demand would necessitate the lighting of additional ovens. Sellers generally are asking $2.60 for the furnace grade, with few sales appearing. Foundry coke requirements continue light, at unchanged prices.

Production of coke in the Connellsville region for the week ended Aug. 9 was 19,790 tons, compared with 19,000 tons the preceding week and 96,850 tons in the same period a year ago, according to the *Connellsville Courier.*

Boston—Coke continues to move in moderate volume. Domestic shipments have slowed up.

New York—The coke market is weak, with beehive furnace unsteady at $2.50, Connellsville, and beehive foundry of the standard variety at $2.50 to $2.75, Connellsville. Premium brands of beehive foundry coke are $4.85, Latrobe. By-product foundry coke is $9 to $9.40, delivered, Newark, N. J.; $11, New England; and $9, Philadelphia.

Cincinnati—Shipments of by-product foundry coke continue light. New quotation of $9.05, delivered, Cincinnati, is reported firm. Seasonal upturn in domestic grades is predicted soon.

St. Louis—New orders and specifications for coke continues at a low ebb. Contract deliveries are more than sufficient for current melting requirements and stock piles have gained considerably. The state of Illinois has placed contracts for 290,000 tons of bituminous coal, a considerable part coming to St. Louis companies.

Birmingham, Ala.—Coke production has been reduced to contract requirements. Consumers are well supplied. Prices are steady.

Freyn Goes to Russia

H. J. Freyn, president of Freyn Engineering Co., Chicago, sailed Aug. 21 for England, Germany and the U. S. S. R. Mr. Freyn will visit the Leningrad organization of this company in connection with the consultation services it is rendering to the Soviet iron and steel industry. He will also be in touch with the Kuznetsk organization of his company, which is designing and constructing a complete steel works of a million tons annual capacity at Kuznetsk, Siberia.

Southern Equipment Co., St. Louis, manufacturer of kitchen and cafe equipment, has increased its capital to $60,000 to provide for expansion of business.

Pacific Coast

Improvement in Demand Lags in All Centers—No Change Made in Prices—Building Holding at Moderate Rate—April Imports Show Decrease in Most Classes

Seattle—Iron and steel markets of the Pacific Northwest are not recovering from mid-season depression as rapidly as expected.

Foundry operations are below normal. Business is spotty, some plants being busy, others practically idle. Material stocks are large and buying is restricted. No. 1 Columbia pig iron is quoted at $24.50 in 100-ton lots and $25.50 in smaller tonnages, delivered plant. A stove works at Everett is reported to have purchased 100 tons of Sloss pig iron, high phosphorus content, at $23.90, delivered plant. Tyneside coke is unchanged at $14 and Victoria at $14.50.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Prices of plates, shapes and bars are unchanged, reinforcing at 2.30c, merchant bars and shapes at 2.25c, and plates from 2.15c up, according to conditions.

Local steel mills continue to book considerable bar tonnage in lots of 50 tons or less and although the outlook is not bright, operations remain unchanged. No large projects are pending, the largest being 350 tons for a building at Yakima and an unstated tonnage for the American Can Co. pier at Seattle.

The largest plate award of the week, 450 tons, involved in a surge tank for the Diablo power project for Seattle, was taken by the Commercial Boiler Works, Seattle. Fisher Body Co. has received 300 tons of sheet steel piling, furnished by Jones & Laughlin, to be used in bulkheading the Duwamish river alongside the local plant. Anacortes, Wash., will receive bids Sept. 5 for a city water project involving over 2000 tons of steel plate and cast iron pipe. Some alternates for wood pipe are requested.

The structural market is quiet, recent awards having been in small tonnages. The only project of importance pending is the Fox theater, Spokane, involving 300 tons. Bids were opened this week. State highway department will open bids Sept. 2 for a steel cantilever bridge over the Hoh river, Jefferson county, Wash., tonnage unstated.

Finished Materials

Spotty business is reported by wholesale jobbers. Out of stock buying predominates as there is little mill buying. Sheets continue in fair demand.

Stevens & Koon, consulting engineers for a steam power plant at Eugene, Oreg., announce that the contract for furnishing a condenser went to C. H. Wheeler, through W. S. Turner Co., Portland. On the same project Young-Hartman Co., Portland, received the contract for furnishing settings for the boilers.

Under readvertised bids, the Washington state purchasing department divided an award for furnishing 90 tons of guard rail cable between the Williamsport Wire Rope Co. and Columbia Steel Co. Fifty tons of fittings for the same project went to the Ballard Drop Forge Co., Seattle, last week.

Pipe Buying Is Less

Seattle is in the market for 188 tons of 16-inch cast iron pipe, bids Aug. 22. Dayton, Wash., intends to purchase 800 feet of 12-inch steel pipe for replacements. Pipe agencies are awaiting detailed plans for the water project at Anacortes, Wash., bids Sept 5. W. C. Morse & Co., Seattle, are consulting engineers. No cast iron pipe awards of 100 tons or over were placed this week.

Old Materials

The steel scrap market is unchanged but buyers are tightening specifications and purchasing only the better grades. Prices are unchanged at $9.50 to $11 gross. Most material being received is railroad scrap and stocks are increasing slightly.

Imports Show Decrease

San Francisco—(*By Air Mail*)—Movement of iron and steel products on the Pacific Coast has shown little improvement during the past few weeks. Among more important bookings were 450 tons of structural steel shapes for a bank in San Francisco, 1480 tons of cast iron pipe for Santa Monica, Calif., and 2500 tons of reinforcing steel bars for the Ford plant at Richmond, Calif.

Imports of iron and steel products on the Pacific Coast during April, figures for which have just been received, show an increase over March imports in bars and shapes, and a decrease in pig iron, coke and tubular products. The aggregates for the major items were as follows:

	Tons April 1930	Tons March 1930	Tons April 1929
Pig iron	600	1,790	438
Coke	7,080	10,589	3,436
Bars	1,723	1,126	656
Shapes	6,306	4,822	3,393
Tubular products	710	1,075	606

Bars, Plates and Shapes

Soule Steel Co. has booked 2500 tons of concrete bars for the Ford plant in Richmond, Calif. Other import lettings include 420 tons for the Sixth street viaduct in Los Angeles, 277 tons for a subway in Tucson, Ariz., and 415 tons for the Washington street bridge, Los Angeles. A fair volume of pending business is reported, new inquiries including 300 tons for a hotel addition in Pasadena and 300 tons for an apartment in Los Angeles. San Francisco out-of-stock quotations continue at 2.50c, base, on carload lots. Demand for merchant bar steel is light, most orders and inquiries involving unimportant tonnages.

Shape awards totaled 1753 tons, the smallest weekly aggregate in six weeks. The Judson-Pacific Co. took 450 tons for an addition to the Bank of Italy, San Francisco. Other awards included 473 tons for a subway in Tucson, Ariz., placed with an unnamed interest, 190 tons for the city of Los Angeles, booked by the Pacific Iron & Steel Co., and 250 tons for a theatre in Santa Barbara, secured by the Consolidated Steel Corp. The only new inquiry of importance involves 100 tons for an overhead crossing in Humboldt county, Calif. Plain shapes range from 2.15c to 2.25c, c.i.f.

Other Finished Material

Awards of cast iron pipe aggregated 1616 tons. C. G. Claussen & Co. took 1480 tons for Santa Monica and will supply French pipe. Cloverdale, Calif., awarded 122 tons to an unnamed interest. The National Cast Iron Pipe Co. was low bidder on 783 tons for Glendale, Calif. Whittier, Calif., has rejected bids on 226 tons. R. E. Hazard was low bidder on 301 tons for improvement of La Jolla street, San Diego, Calif. Bids will be opened Sept. 8 for 436 tons for Beverly Hills and Sept. 2 for 189 tons for improvement of Fifty-fourth street, San Diego. Movement of standard steel pipe is restricted to small lots.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2 points less. Wrought iron pipe, Pittsburgh base.

BUTT WELD

Steel In.	Blk.	Gal.	Iron In.	Blk.	Gal
½	58	44½	½	23	5
¼	62	50½	¾	28	11
1—3	64	52½	1 and 1¼	31	15
			1½ and 2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7 and 8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+13	+48
¾	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7 and 8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¼—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

SEAMLESS TUBING

Cold drawn; f.o.b. mill

Random lengths over 5 ft.....55%
Selected lengths, 1 to 18 ft.....53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. $37.00 to 38.00
Four-inch, Birmingham 41.00 to 42.00
Four-inch, Chicago ..... 49.20 to 50.20
Six to 24-inch, Chicago 45.20 to 46.20
Six-inch and over, N. Y. 38.50 to 40.50
Four-inch, New York .... 41.50 to 42.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.10c
Chicago	2.90c
Cincinnati	3.15c
Cleveland	2.85c
Detroit	3.00c
Houston	3.00c
Los. Ang.	3.40c
New York††	3.10c
Philadelphia	2.70c
Pittsburgh	2.75c
Portland	3.15c
San Frans.	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.15c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.10c
Chicago	3.00c
Cincinnati	3.15c
Detroit	3.00c
New York††	3.10c
Philadelphia	2.70c
St. Louis	3.15c
Tulsa	3.65c

REINFOR. BARS

Baltimore	2.50c-3.31c
Boston	2.665c
Buffalo	2.95c
Chattanooga	3.10c
Cincinnati	3.15c
Cleveland	2.25c-2.44c
Detroit	2.30c-3.00c
Houston	3.00c
Los Ang. cl	2.40c
Los Ang. lcl	2.70c
New York	2.65c-3.10c
Philadelphia	2.55c
Pittsburgh	2.75c
San Fran. cl	2.30c
San Fran. lcl.	2.60c
Seattle	3.15c
St. Louis	3.15c
Tulsa	3.65c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	3.40c
New York	3.10c
Philadelphia	2.60c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York	3.30c
Philadelphia	2.60c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.75c

NO. 10 BLUE

Baltimore	3.50c
Bost. 3/16-in.	3.915c
Buffalo	3.50c
Chattanooga	3.75c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.10c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
New York	3.40c
Portland	4.00c
Phila. *†	3.15c
Pitts.**	3.10c
San Fran.	3.80c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.545c
Tulsa	3.95c

NO. 24 BLACK

Balt. *†	3.75c
Boston	4.70c
Buffalo	4.20c
Chicago	4.05c
Cincinnati	4.05c
Clev. ***	3.75c
Detroit	3.95c
Los Ang.	4.70c
New York	3.55c to 3.65c
Phila. *†	3.70c
Pitts. **	3.65c
Portland	5.00c
San Fran.	4.35c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.79c
Tulsa	4.45c

NO. 24 GAL. SHEETS

Balt.*†	4.25c
Boston	5.45c
Buffalo	4.40c to 4.60c
Chicago (lc. del.)	4.60c
Chicago (outside shipment)	4.35c to 4.60c
Cincinnati	4.90c
Cleveland***	4.35c
Detroit	4.60c
Houston	5.40c
Los Ang.	5.10c
New York	4.25c
Phila. *†	4.25c
Pitts.**	4.20c
Portland	5.50c
San Fran.	5.00c
Seattle	5.50c
St. Louis	4.85c
St. Paul	4.58c
Tulsa	5.35c

BANDS

Baltimore	3.50c
Boston	4.015c-5.00c
Buffalo	3.50c
Chattanooga	3.30c
Chicago	3.10c
Cincinnati	3.35c
Cleveland	3.10c
Det. 3/16-in. & lighter	3.30c
Houston	3.65c
Los Ang.	4.30c
New York	3.40c
Philadelphia	3.00c
Pittsburgh	3.10c
Portland	3.50c
San Fran.	3.75c
Seattle	4.15c
St. Paul	3.35c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston	5.50c-6.00c
Buffalo	3.90c
Chicago	3.65c
Cincinnati	3.90c
Cleveland	3.65c
Det. No. 14 & lighter	3.80c
New York	3.75c
Philadelphia	3.25c
Pittsburgh	4.10c
Seattle	5.15c
St. Paul	3.90c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.85c
Chicago	3.35c
Cincinnati	3.80c
Cleveland	3.40c
Detroit	3.65c
Los Ang. (a)	4.50c
New York	3.50c
Philadelphia*	3.40c
Pittsburgh	3.35c
Portland (a)	4.50c
San. Fran.(a)	4.25c
Seattle (a)	4.75c
St. Paul (a)	3.85c
St. Louis	3.60c
Tulsa	4.75c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

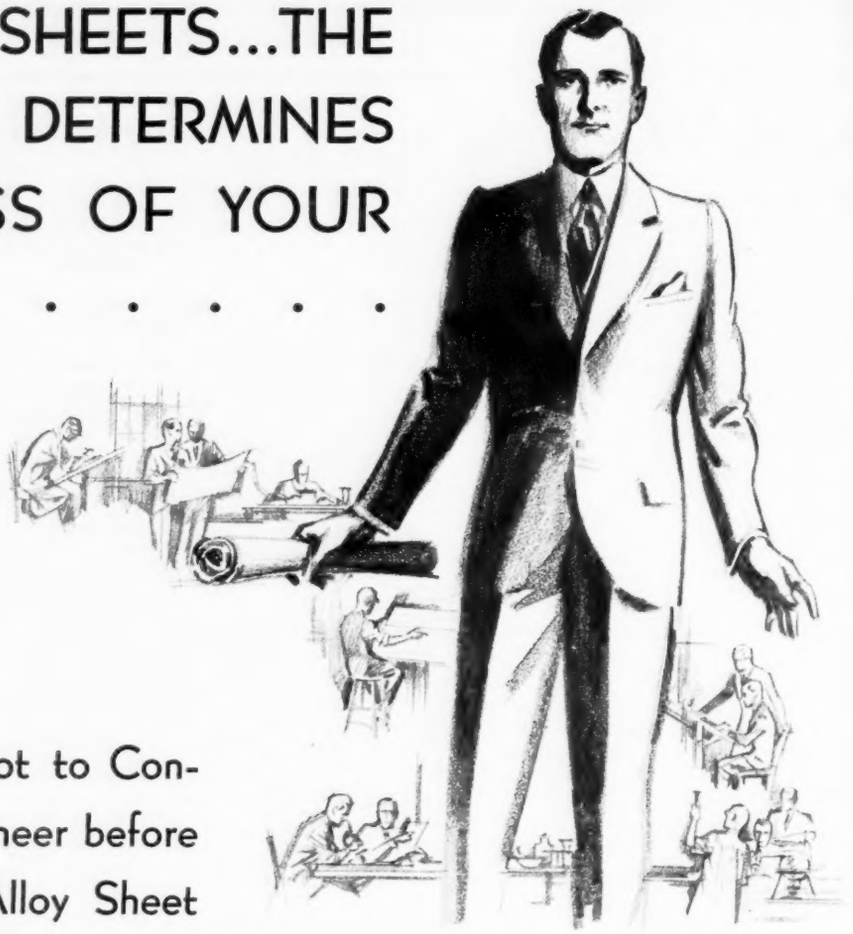
COLD ROLL. STRIP

Boston 0.100-in 500 lbs. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	6.15c
Cincinnati	6.10c
Clev. (b)	5.95c
Detroit	5.40c
New York	5.05c
Phila. (c)	4.95c

(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.

††Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

WITH ALLOY SHEETS...THE RIGHT START DETERMINES THE SUCCESS OF YOUR PRODUCT . . . . . .



You Cannot Afford Not to Consult the Newsteel Engineer before you Decide on your Alloy Sheet

ARE you trying to determine whether you can use rust-resisting, non-corrosive alloy sheets to advantage for your product? Or, if you are already using alloy sheets—are you still trying to find the right sheet? These are questions that deserve the close personal attention of a steel sheet specialist, and now is the time to call him in—when all manufacturers are beginning to sense the possibilities of alloy steel.

The Newsteel Engineer is the man you need. The man who can save you money and time by taking over your experimental and development work on alloy sheets. His achievements with other types of steel sheets are recognized throughout the industry. Now, he offers his services on alloy sheets with this same assured confidence of definite results. You can make no mistake by calling in the Newsteel Engineer. He will work with you and for you to an advantageous decision.

THE NEWTON STEEL CO., YOUNGSTOWN, OHIO

Detroit Cleveland Chicago New York Indianapolis

PLANTS AT NEWTON FALLS, OHIO, AND MONROE, MICHIGAN

Newaloy Sheets

OF NIROSTA METAL—A CHROMIUM NICKEL STEEL

Other high quality Newsteel Sheets include Electrical, Enameling, Full-Finished, Automobile, Steel Furniture, Full Pickled, Single Pickled, Black, Blue Annealed, and Copper Bearing.

SAVE WITH STEEL

Mill Products

Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass product prices based on 11.00c, del., Conn. for copper

Sheets	
Yellow brass (high)	17.87½
Copper, hot rolled	20.75
Lead, full sheets (cut ½c more)	9.25
Zinc sheet (100-lb. base)	9.50
Tubes and Pipes	
Seamless yellow brass (high)	22.75
Seamless copper	23.00
Rods	
Yellow brass (high, full turnings)	16.12½
Naval brass	19.00
Anodes	
Copper, untrimmed	18.25
Wire	
Yellow brass (high)	18.37½

Old Metals

Dealers' buying prices, cents lb.

Heavy Red Brass	
New York	7.25 to 7.50
Chicago	7.00 to 7.50
Cleveland	7.50 to 8.00
St. Louis	7.00 to 7.50
Heavy Yellow Brass	
Cleveland	4.50 to 5.00
Heavy Copper and Wire	
New York	8.50 to 8.75
Boston	8.50 to 8.75
Chicago	8.75 to 9.00
Cleveland	8.00 to 8.50
St. Louis	7.50 to 8.00
Red Brass Borings	
New York	6.75 to 7.25
Yellow Brass Tubing	
Cleveland	4.50 to 5.00
Light Copper	
New York	7.00 to 7.50
Chicago	6.75 to 7.00
Cleveland	7.00 to 7.50
St. Louis	7.00 to 7.50
Light Brass	
Boston	4.00 to 4.25
Chicago	4.50 to 5.00
Cleveland	3.50 to 4.00
St. Louis	4.00 to 4.50
Zinc	
New York	2.25 to 2.50
Cleveland	1.50 to 1.75
St. Louis	2.00
Aluminum	
Clippings, soft, Cleveland	12.00 to 13.00
Clippings, hard, Cleveland	8.50 to 9.00
Borings, Cleveland	4.50 to 5.00
Cast, Cleveland	7.00 to 7.50
Cast, Boston	7.50 to 8.00
Cast, St. Louis	7.50

Secondary Metals

Remelt aluminum No. 12	14.00 to 15.00
Brass ingot, 85-5-5-5	11.00

Metals

New Business Continues to Lag —Prices Show Little Change— Copper Is Uncertain

New York—New business in metals continues deferred until indications of larger consumption in the autumn are seen. Good future sales have been made in some metals, especially copper and zinc, but as the mills buying these metals do not have large future business on their books, it appears as if they have bought on account of cheapness rather than on definite prospects of consumption.

Copper—After holding at the nominal price of 11.00c early last week, some metal has sold down to 10.75c, Connecticut. Only one producer cut the price and with the sale of a substantial tonnage he quickly returned to the asking price of 11.00c. Many reports about this situation and small tonnages offered in the outside market at concessions, gave rise to the impression that copper was much easier to buy at the lower prices than proved to be the case. Therefore, some consumers shopped around and refused to believe that there was practically no copper below 11.00c in the past few days.

Zinc—After dropping to 4.30c, East St. Louis, about a week ago, and holding there for several days the market began to firm up again in the past few days. As in the strength of a month ago, one of the principal elements has been the reluctance of smelters to sell much metal at current prices. Demand has not been large, but some smelters have bought tonnages around 4.30c. It is believed that their purchases have been mostly to replace sales. The ore market has been firm at $32 a ton.

Tin—Consumers have bought a little spot and nearby metal from day to day, but there has been very little business in futures and the market as a whole has been quiet. Stocks continue to accumulate here and in England.

Lead—New business is light, but as producers recently sold well for August and September, they appear well able to withstand a brief quiet spell.

Antimony—Much of the recent price strength in this metal has been lost. Demand has been light in the past week. Future supplies from China still are in question so that this market remains uncertain.

Aluminum—New business continues small but prices are steady.—*Daily Metal Trade.*

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.21
90 per cent benzol	0.21
Toluol	0.30
Solvent naphtha	0.25
Commercial xylol	0.25
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.15 to 0.16
Per Pound at Producers' Plants	
Naphthalene flakes	0.04½ to 0.05½
Naphthalene balls	0.05½ to 0.06½
Per 100 Pounds Delivered	
Sulphate of ammonia	$1.90

Coke By-Products Quiet; Sulphate Contracts Delayed

New York — Pending announcement of the contract price to the fertilizer trade, sulphate of ammonia continues nominally unchanged. One cause for delay in announcing the new contract price is lack of definite information as to what action European producers are planning to take with regard to curtailment of production. Unofficially, it is reported there will be substantial curtailment, in which case this should have a firming tendency upon the domestic market. While there is no tariff on sulphate of ammonia imports under the new schedules, the major influence of such curtailment would be reflected by less keen foreign competition in the export markets. Sellers of light oil distillates point to a slight improvement in demand from the lacquer trade. The situation otherwise is unchanged, with stocks still on the heavy side and prices steady.

Prices of the Week, Cents a Pound

	Copper			Straits Tin			Lead		Zinc	Aluminum		
	Electro delivered	Lake delivered	Casting refinery	New York Spot	New York Futures	Lead N. Y.	East St. L.	Zinc St. L.	98-99%	Spot Antimony	Ingot Nickel
Aug. 13	10.75	11.07½	10.87½	29.82½	30.25	5.50	5.35	4.30	22.90	7.75	35.00
Aug. 14	10.75	11.07½	10.62½	29.80	30.20	5.50	5.35	4.30	22.90	7.80	35.00
Aug. 15	11.00	11.07½	10.87½	29.85	30.20	5.50	5.35	4.35	22.90	7.80	35.00
Aug. 16	11.00	11.07½	10.87½	.....	.....	5.50	5.35	4.40	22.90	7.80	35.00
Aug. 18	11.00	11.07½	10.87½	30.00	30.40	5.50	5.35	4.40	22.90	7.75	35.00
Aug. 19	11.00	11.07½	10.87½	30.12½	30.50	5.50	5.35	4.35	22.90	7.75	35.00

Europe

British Mills Book Tonnages for Egypt and Canada—French Syndicate Domestic Sales

Birmingham, Eng.—Approximately 3000 tons of British steel will be used in carrying out a contract secured by Dorman Long & Co. of Middlesbrough for a new bridge over the Nile at Cairo to replace the existing Kasr-el-Nil. The tender is valued at £308,250. The bridge will have a total length of 1250 feet and a width of 66 feet and will consist of eight fixed spans. The contract includes a temporary wooden bridge and demolition of the existing bridge. It is anticipated the new bridge will be ready for traffic by January, 1933.

Two substantial orders for forgings for Canada have been received by the Vickers branch of the English Steel Corp. Ltd. and are being executed at the River Don Works, Sheffield. The first is for 500 tons of large forgings for chemical plants in British Columbia, and it is expected they will be delivered in about five months. The other Canadian order is for some forgings to be made from Vickers special alloy steel. English steelmakers are looking to Canada for a big increase in orders for British material.

Holidays Make Dull Market

Markets have been quiet owing to holidays in all British steel centers this week. The Scottish holidays were taken earlier, but even there some works are still closed through lack of specifications. In Middlesbrough a good tonnage of structural steel is being shipped by makers but the rate of production has been curtailed owing to the general stagnation. Birmingham structural engineers usually take a good deal of steel from Middlesbrough as there is only one large plate mill operating in the Black Country. This is allied to a rolling stock concern and for some time its output has been mainly taken up in execution of oversea contracts. There is a shortage of orders, however, for passenger and freight car building. English railroads have no money to spend and are curtailing activities in their own workshops. Oversea business is restricted as far as India is concerned through the unrest there. Orders and inquiries from South Africa have diminished and in the Argentine financial troubles are being experienced. Sheffield loco builders are poorly employed and there is only a moderate demand for tubes and boilers.

Sheffield works producing railroad materials have booked some overseas business, including 12,000 carriage and wagon axles for India, and there are some other inquiries from that country. An order from Chili is for a large number of springs. Shipments of steel products from Glasgow last week totaled 2150 tons. In the Barrow district steel plant is temporarily idle, except rail mills, which are still executing some large contracts for rails, which will last them until about the end of September.

Continental competition in steel is a serious matter to British makers. There has been little buying this week but there have been deliveries of various classes of steel to British ports. Midland merchants have booked practically no new business this week, as most plants are closed. In fact the custom of closing down entirely for the first week of August has become much more general within the last few years. Consequently, when the iron and steel meeting was held at Birmingham yesterday, only about half the usual number of traders were present.

Pig iron makers in Scotland are suffering severely from foreign competition and only 12 furnaces are in blast. Last week 1830 tons of Continental iron and 2000 tons of Indian iron were unloaded. Middlesbrough pig iron makers have been able to maintain market prices partly because output has been curtailed to such an extent that there is now little more than sufficient for needs of the market. The hematite position is rather different. Stocks are heavy, it is said they have reached 100,000 tons, and merchants especially are keen to take orders even at cut prices. Continental hematite is comparatively cheap and it is therefore almost impossible to make headway with east coast hematite sales in the near continental countries. The hematite position on the west coast is similar. The outlook is discouraging as deliveries are being suspended at many works.

Buying Gives No Test

Midland pig iron prices are now on a basis of 5s ($1.22) below that of a month ago, and within the next few weeks there should be considerable revival of interest. At the moment, however, it is not possible to test the effect of the latest reduction, owing to the small buying being done. When autumn trade begins to flow foundries are expected to consider forward business. But for the moment stocks are being allowed to dwindle almost to nothing.

In the finished iron trade of South Staffordshire the position is depressing for most manufacturers. Prices are relatively high and competition from steel becomes more accentuated in times of bad trade and is most acute at this juncture when so much cheap continental material is being freely offered.

Tin plate manufacturers are pursuing a policy of economy in their decision to discontinue a 2½ per cent bonus to the higher paid men. This announcement was made at a recent meeting of the Welsh tin plate trade joint industrial council. A bonus of 7½ per cent to the lower paid men is being continued. Prices are firm on

British Pig Iron Lower; Markets Still Depressed

London—(*By Cable*)—Middlesbrough pig iron prices have been reduced 4 shillings (97 cents) a ton, to the lowest levels since the war. Pig iron stocks are increasing in all districts in England. Demand for steel shows a slight improvement; a railroad has placed 1000 tons of steel work for a widening project. Pig iron production in July dropped to 486,100 tons from 563,200 tons in June. Furnaces active Aug. 1 numbered 105, 28 less than July 1. Steel output in July amounted to 621,400 tons, compared with 600,100 tons in June. British iron and steel imports in July totaled 198,788 tons, against 214,504 tons in June. Exports were 303,444 tons, compared with 250,969 tons in June.

Continental markets continue depressed. Belgian mills have booked orders sufficient for three to four weeks, hoping to check the downward tendency in prices. French imports are increasing and the outlook is dull. Berlin reports building activity well maintained. Surplus stocks of bars and shapes are being liquidated. Prospects for railroad business are improving.

Cancellation of wage schedules by coal mine owners in the Ruhr basin affects 300,000 workers, and the latter are preparing for a bitter battle if, as anticipated, wages are reduced.

The Story of One
WROUGHT IRON ROOF
50 Years of Service

GLOBE FOUNDRY AND MACHINE WORKS
MANUFACTURERS OF
ROLLING MILL MACHINERY IRON AND BRASS CASTINGS
W. B. CARTER, Manager
NILES, OHIO

All Orders Subject to Strikes or Other Causes Beyond Our Control

Sharon Steel Hoop Company,
Sharon, Pa.

June 16, 1930

Dear Sir:

Attention: Mr. Frank A. Weidman
Manager of Wrought Iron Division

I am glad to write you the history of the Wrought Iron Roof sample I gave you.

This was part of a sheet from the roof of our pattern shop building and was taken off six or seven years ago. I recollect distinctly when the roof was put on, my father paying me, and some other kids, a few cents a sheet for painting them. We got more paint on us than the sheets did. I couldn't have been more than fourteen or fifteen years old then. I'm now seventy-two, so this roof must have given at least fifty years service; and so far as I can remember that was the only time it was painted.

We got these sheets from "the Old Russia Mill" in which my father had an interest. Some local men built this mill to roll Russia Iron but found they couldn't. They then started to roll wrought iron sheets and these were about the first they made.

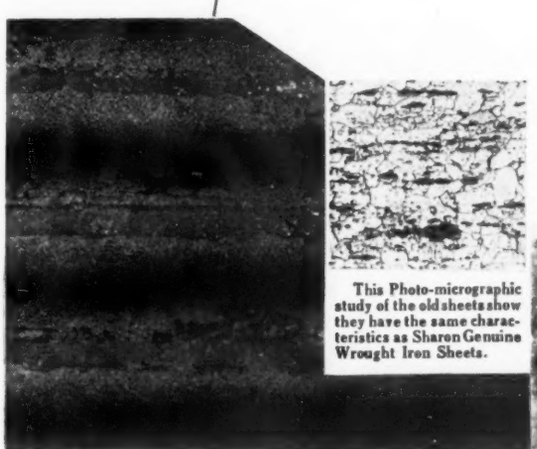
This building is across from the Pennsylvania Railroad station and is on the banks of the Mahoning River. High water sometimes gets into the shop. So conditions haven't always been easy for the roof.

Yours very truly,

GLOBE FOUNDRY AND MACHINE WORKS

W. B. Carter

Manager



This Photo-micrographic study of the old sheets show they have the same characteristics as Sharon Genuine Wrought Iron Sheets.

Sample of the corrugated black wrought iron taken from the roof of the pattern storage building of the Globe Foundry and Machine Works. Available records indicate the roof was painted but once. Some of the paint still adheres to the metal.

Front view of the pattern storage building.

You *too* can be assured of long life and trouble-free service from Wrought Iron Sheets.

When you need roofing or siding Sharon can now roll your sheets from Byers Genuine Wrought Iron.

Wrought Iron Sheets mean permanence, durability and low maintenance cost.

ASK US ABOUT THEM!

SHARON STEEL HOOP CO.
SHARON, PA.

tin plate and the upward movement in the tin market is an encouraging feature. Makers are not taking less than 18s ($4.40) a box for standard sizes. The trade is in a better position than 12 months ago, as many works are well booked, although deliveries are being held up in some cases.

Welsh steelworks are complaining of severe continental competition, as illustrated by the difference of at least £1 5s ($6.10) per ton in favor of Continental steel bars. No improvement has taken place in galvanized sheets but firmness of spelter is encouraging.

French Form Syndicate in Steel; Orders Keep Mills Well Occupied

Paris—The approach of August, characterized by absence of many heads of departments on vacation, has accentuated the preparation of schedules of iron and steel works, and also caused the management of various concerns to look to the future. One question discussed is that of the merchant steel comptoir. Although results of the Liege meetings have been that the formation of the international comptoir for merchant steel has suffered a setback, the French have found it necessary to organize a syndicate for their domestic market. A new scheme has been set up, by which the syndicate will control distribution of domestic orders between French works. Under the term of merchant bars are included all ordinary sections, such as rounds, squares, small angles, flats, small beams, channels, in ordinary basic bessemer steel. Each works will have a definite quota and those works which do not sell their quota will be entitled to an indemnity, while those which exceed their quota will pay a penalty. Furthermore, members of the syndicate will have to respect the minimum prices fixed by the syndicate, but no penalties are provided for any breach in this direction, and it is probable that in some cases the prices will be cut. However, little fear is experienced in this connection, since already the price of merchant bars has dropped from 720 francs ($28.15) to 600 francs ($23.50). The present arrangement takes effect as from Aug. 1 for a period of five months, until Dec. 31, and the minimum price for the domestic market has been fixed at 620 francs ($24.25), Thionville parity. This means an increase of 20 francs per ton on the prevailing price, and it is hoped that a further increase of 10 francs will be made in September.

The price of semifinished steel also has been revised. For several months the price of 2¼-inch billets was fixed at 620 francs ($24.25), and this price was high in comparison with prices ruling for merchant steel, which were not controlled; consequently, the price of billets has been brought down to 595 francs ($23.25), Thionville parity. Prices of ingots, blooms and sheet bars also have been shaded.

General activity in France remains satisfactory, and a fair volume of orders is passing. Mills are operating below capacity, but at a higher percentage than those of neighboring countries. There has been a considerable amount of orders for concrete bars, structural steel and rails, and large tonnages are required for completion of the new scheme of fortification of the French frontiers. Generally speaking, the works are active and there is no unemployment.

Belgian Exports Decline

Brussels—Exports of iron and steel from Belgium and Luxemburg in May showed a decided decline from March and April.

Imports of pig iron declined but imports of other iron and steel products increased slightly. Comparisons follow, in metric tons:

	IMPORTS		EXPORTS	
Mon. ave.	Pig iron	Other iron and steel	Pig iron	Other iron and steel
1927	31,760	28,000	11,350	388,000
1928	45,910	38,000	8,240	380,000
1929	56,150	37,000	10,090	394,500
1930				
Jan.	44,274	37,200	13,551	392,000
Feb.	38,121	32,700	7,320	295,600
Mar.	42,240	29,600	9,412	403,900
April	36,504	26,200	10,624	436,400
May	34,007	28,000	10,266	355,600

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, August 18	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable		£ s d		£ s d		£ s d		£ s d
PIG IRON								
Foundry No. 3, Silicon 2.50-3.00	$15.46	3 3 6	$14.61	3 0 0	$14.61	3 0 0	$14.61	3 0 0
Basic-bessemer	15.95	3 5 6†	13.39	2 15 0	13.39	2 15 0	13.39	2 15 0
Hematite, Phosphorus 0.02-0.05	17.29	3 11 0	24.82	630*	.....	.....	17.78	3 13 0
SEMIFINISHED STEEL								
Billets	$28.25	5 18 6	$21.18	4 7 0	$21.18	4 7 0	$21.18	4 7 0
Wire rods	41.40	8 10 0	30.44	6 5 0	30.44	6 5 0	30.44	6 5 0
FINISHED STEEL								
Standard rails	$40.18	8 5 0	$31.66	6 10 0	$31.66	6 10 0	$31.66	6 10 0
Merchant bars	1.74c	8 0 0	.99c	4 10 0	.99c	4 10 0	.99c	4 10 0
Structural shapes	1.68c	7 15 0	1.06c	4 16 0	1.06c	4 16 0	1.06c	4 16 0
Plates, ship, bridge and tank	1.79c	8 5 0	1.19c	5 8 6	1.19c	5 8 6	1.22c	5 10 6
Sheets, black, 24 gage	2.17c	10 0 0	2.09c	9 9 9	2.09c	9 9 9	2.06c	9 7 6
Sheets, galvanized, 24 gage, corrugated	2.47c	11 7 6	2.46c	11 3 9	2.46c	11 3 9	2.97c	13 10 0
Bands and strips	2.17c	10 0 0	1.10c	5 0 0	1.10c	5 0 0	1.10c	5 0 0
Plain wire, base	2.06c	9 10 0	1.46c	6 12 6	1.46c	6 12 6	1.43c	6 10 0
Galvanized wire, base	3.04c	14 0 0	1.57c	7 2 6	1.57c	7 2 6	1.57c	7 2 6
Wire nails, base	2.39c	11 0 0	1.38c	6 5 0	1.38c	6 5 0	1.38c	6 5 0
Tin plate, base box 108 pounds	$4.38	0 18 0	.....	.....	.....	.....	$ 9.01	1 17 0

*France

Domestic Prices at Works or Furnace—Last Reported			Francs		Francs		Marks	
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$16.44	3 7 6	$19.26	490(2)	$17.08	600	$19.84	83
Basic pig iron	15.95	3 5 6	20.63	525(1)	13.44	480	21.15	88.50
Furnace coke	3.17	0 13 0	6.60	168	5.74	205	5.14	21.50
Billets	28.85	5 18 6	22.20	565	21.00	750	28.08	117.50
Standard rails	1.79c	8 5 0	1.46c	810	1.62c	1,245	1.47c	136
Merchant bars	1.74c	8 0 0	1.18c	655	1.07c	820	1.48c	137
Shapes	1.84c	8 10 0	1.26c	700	1.18c	910	1.45c	134
Plates, ship, bridge and tank	1.95c	9 0 0‡	1.46c	810	1.33c	1,025	1.65c	153
Sheets, black, 24 gage	2.28c	10 10 0	2.72c	1,510	2.54c	1,950	1.36c	126
Sheets, galvanized 24 gage, corrugated	2.58c	11 17 6	3.52c	1,955	2.60c	2,000	3.67c	340
Plain wire	2.06c	9 10 0	2.03c	1,125	2.15c	1,650	2.34c	217
Bands and Strips	2.17c	10 0 0	1.33c	740	1.43c	1,100	1.72c	159

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 13s 0d ($3.17) f. o. b. Ferromanganese £19 6s 0d ($93.99) delivered Atlantic seaboard, duty-paid. German ferromanganese £12 5s 0d ($59.66) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

Machinery

THE general picture of the machinery market this week shows just enough scattered business to raise August thus far above the dead low level of July, and to maintain the hope of revival this fall. The Amtorg Trading Corp. continues to be an important factor in the market. In Chicago an electric refrigerator concern orders some additional equipment, and the Western Electric Co. is reported to be subletting machine work. Effects of the drought upon the machine business are forecast by the concern which poor crop prospects give manufactures of agricultural machinery and tractors.

New York—Continued buying by the Amtorg Trading Corp. for shipment to Russia is outstanding in an otherwise dull machine tool market. While the extent of purchases cannot be ascertained at this time, they are understood to be substantial. It is reported that much of the equipment purchased recently by Amtorg has been for a tractor plant.

Large domestic buyers continue to show but little interest. Such orders as are now coming through are principally for single machines. The city department of plants and structures has opened bids on a 28-inch planer and a No. 2 miller. The board of transportation, which recently closed on a large number of overhead cranes for its 207th street shop, is expected to be in the market shortly for machine tools for these shops.

Worcester, Mass.—While the market generally remains dull, the singular point in the situation in Central Massachusetts is a rising wave of confidence that a business revival is not far away. Inquiries by the leading manufacturers disclose that stocks everywhere are at a minimum, giving strength to the theory that when the buying movement finally gets under way, production will step up quickly to meet the demand. Grinders, which were in demand long after the recession started, have slumped. In the textile lines in particular large stocks will be needed soon.

Pittsburgh—Machine tool demand continues dull, recent activity failing to improve over the quietness of the preceding several months. Steel mills are showing increased interest in equipment which will result in a definite saving in costs, and engineering work in connection with operating facilities and methods is the most active in a number of years. Sales of standard tools, such as lathes, planers, boring mills, etc., are spotty and usually call for individual machines. Inquiry is lagging and indicates no substantial improvement in demand in the near future.

Cleveland—The reopening of a large automobile plant and the breaking of the drought have tended to strike a note of optimism, even though the general machinery situation remains practically unchanged. Local machine tool builders report scattered sales of single tools which, if continued, will at least make August a better month than July. Dealers who have recently placed new models of machine tools in the Cleveland district report a lively interest in these new installations on the part of production men in other concerns. One machine builder, whose plant has been practically shut down since the first of the month, announces a resumption of operations on Sept. 2.

Aside from the reopening of the automobile plant already mentioned, which called 1500 men back to work, the employment situation in Cleveland is at a standstill. The immediate demand for tool and machine designers appears to have been met, and what demand there is for men is along the line of skilled toolmakers.

Such activity as there is in Cleveland encourages the continued belief in a reasonable revival in the machine business this fall.

Chicago—No change has developed in the slow trend of machine tool buying, but several houses report inquiries being revived, more assurances of orders to be placed later, and a moderate upturn in sales during the week. August apparently will be a dull month for most dealers, with the sales volume the lowest since 1921. Majestic Household Utilities Corp., whose purchases have helped give life to the market for several months, is ordering $25,000 to $30,000 additional in production tools and hoist equipment. A steelworks, which has inquiries out for its expansion work at South Chicago, has added a 24-inch lathe, 32-inch shaper and a planer-type milling machine for its Joliet, Ill., works. Reports are that Western Electric Co. again will sublet machine shop work. Several of the jobbing machine shops have good order books and will be in the market for new equipment. Surveys indicate farm equipment and tractor works somewhat disheartened by poor crop prospects. The Russian tractor orders in this district may not be translated into equipment business, as it is reported a portion of the tractor orders will be shipped from stock.

Britain Leads in Exports of Black, Galvanized Sheets

More black and galvanized sheets are produced in the United States than in any other country of the world, but Great Britain leads in the export trade in these products. Great Britain sold in foreign markets in 1929 a total of 993,862 tons of black and galvanized iron and steel sheets, just a little less than half of all the 2,002,062 tons figuring in export trade. American makers sold slightly more than a third as much as Great Britain, their trade amounting to 340,967 tons. This is approximately 17 per cent of the total volume. Germany was third, with exports of 267,233 tons, about 13 per cent of the total. These three countries with exports amounting to 1,602,062 tons supplied the bulk of the tonnage. France, Belgium, Luxemburg and others shipped a combined total estimated as 400,000 tons.

These figures were compiled by the *Journal* of the American-Belgian Chamber of Commerce in Belgium. The *Journal* points out that British mills rolled 888,800 tons of galvanized sheets and 613,000 tons of galvanized sheets in 1928, but not from British steel. Statistics of British import trade reveal that in 1928 622,978 tons of billets, blooms and slabs were imported, as well as 538,935 tons of sheet bars and tin plate bars, a good share of which importation was shortly re-exported as black or galvanized sheets. "It is almost impossible to over-emphasize the importance of the British colonies in this trade," the *Journal* concludes.

Floyd K. Smith Resigns

Floyd K. Smith, who late in 1929 was elected president of Donner Steel Co. Inc., Buffalo, and its subsidiaries, but who since the merger of that company with other interests into the Republic Steel Corp., Youngstown, O., has been special sales representative for Republic at Buffalo has resigned. Prior to his election as president of Donner Steel he was for about 11 years vice president and treasurer.

Hauser-Stander Tanks Selected By The American Steel and Wire Co.

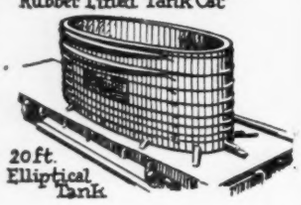
The American Steel and Wire Co., Cleveland

Tanner's Vat with Paddle Wheel

Tanners' and Chemists' Drums

Rubber Lined Storage Tanks

Rubber Lined Tank Car



20 ft. Elliptical Tank

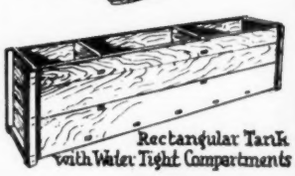
THE American Steel and Wire Company, Cleveland, recently announced an extensive building program that means greatly enlarged plants and more equipment. And it is safe to say that Hauser-Stander Pickling and rubber lined Acid Storage Tanks will be used in the new plants, as they are now used in their other plants.

The Hauser-Stander Pickling Tanks are made of Douglas Fir or Long Leaf Yellow Pine from four to twelve inches thick—depending upon size of tank and service required. All tie rods together with nuts and washers are of acid-resisting bronze or Monel Metal.

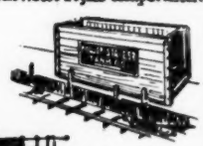
Consult us regarding YOUR pickling problems. We design as well as manufacture and can make tanks to your order lined with lead, rubber or protective wood, or can meet any particular requirements relative to the solution you employ, its temperature, material to be pickled, stress or strain and all such important factors.

"We Win With Quality"

Concave Bottom Tank

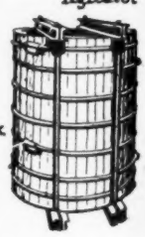


Rectangular Tank with Water Tight Compartments



Heavy Plunger Tank

Tank Equipped with Self-Contained Agitator



Pressure Tank

40000 Gallon Sprinkler Tank

The Hauser-Stander Tank Co.

Cincinnati, Ohio

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

HARTFORD, CONN.—United Airports of Connecticut Inc., division of United Aircraft & Transportation Corp., advises through B. L. Whelan, manager, that the airport development of 140 acres, recently noted, will be ready for use next spring, being the first portion of a 500-acre port. Two hangars, 80 x 125 feet and 125 x 160 feet, will be erected. Austin Co., 120 Broadway, New York, is preparing plans and specifications. (Noted Aug. 14.)

BILLERICA, MASS. — Boston & Maine railroad, W. J. Backes chief engineer, Lechmere square, East Cambridge, Boston, is taking bids on a 1-story sand blast equipment building. Plans are private. Cost is estimated at $40,000.

CAMBRIDGE, MASS. — Cambridge Industrial Trust, 25 State street, has had plans prepared for a power house. W. A. Hall, 80 Boylston street, Boston, is engineer. Cost is estimated at $40,000.

FITCHBURG, MASS. — Simonds Saw & Steel Co. has acquired a site on the Boston & Maine railroad and will wreck former shops of the railroad to make way for a new plant covering over four acres, for the manfacture of saws. Structure will be completed by June, 1931. Two present units of the company will occupy the plant.

HOLYOKE, MASS.—Holyoke Water Power Co. proposes to build a hydroelectric power plant on South Hadley Falls or Appleton street sites. Preliminary plans are being prepared privately. Cost will be more than $150,000.

QUINCY, MASS.—Kennedy Marine Base Inc., care of chamber of commerce, has leased a portion of the Victory plant at Squantum for a large shipbuilding plant. Edward Whiting is superintendent of the Kennedy company.

SPRINGFIELD, MASS.—Granville Brothers Aircraft Inc., Zantford Granville president, will manufacture several planes of a new type.

TAUNTON, MASS.—Electric Light commission has awarded contract for a power station costing over $50,000 to W. Barker, 4 Cohannet street. Same contractor was also awarded contract for a substation and cables, noted June 12 as planned.

WARREN, MASS.—Machine shops of Fyans, Fraser & Blackway, Croade street, recently were damaged by fire. Estimated loss, $25,000. Plant was insured.

WORCESTER, MASS.—Fowler Oil Burner Co., Philip M. Morgan president, plans to establish a branch plant in Canada for the production of oil burners.

PAWTUCKET, R. I.—Dayton Airplane Engine Co., Dayton, O., George Funkhouser president, has merged with Pheasant Aircraft Corp., Fond du Lac, Wis., and smaller companies will be added in the future. Plants of the two companies will be moved here and operations will be united in a single structure. Capt. R. J. Goodman-Crouch will be president of the new company.

New York

BUFFALO—Alcacetic Corp. has has been incorporated with $400,000 capital by H. A. Sanders, Marine Trust building, to deal in generators.

BUFFALO—Madison Wire Co. Inc. advises through A. G. Madison, 550 Abbott road, that the company is erecting a new wire plant on a 5-acre site on Indian Church road. The first plant unit will be ready for occupancy in November and will be 150 x 250 feet. Boilers, wire drawing equipment, heating units and miscellaneous equipment will be needed.

JAMESTOWN—Art Metal Construction Co. will rebuild a mill formerly owned by Acme Worsted Mills Co., and will use it principally for the manufacture of metal furniture. Company recently acquired extensive warehouse and service facilities in Chicago, as noted June 26.

NEW YORK—Scrap Iron & Steel Co. has been incorporated with $20,000 capital by J. L. Friedman, 551 Fifth avenue.

NEW YORK—DeVita Iron Works has been incorporated with $10,000 capital by T. F. O'Sullivan, 103 North boulevard, Queens.

NEW YORK—Empire Steel Products Co. has been incorporated with 5000 common shares by Medina & Sherpick, 165 Broadway, to engage in a construction business.

NEW YORK—Adco Electric Mfg. Co. has been incorporated with $20,000 capital by M. G. Cohen, attorney, 305 Broadway, to deal in electric supplies and radios.

Pennsylvania

PHILADELPHIA — Home Stoker Co. Inc. has been incorporated with

Herberts Machinery Co. in New Home

HERBERTS Machinery Co. Ltd., Los Angeles, recently celebrated its fifteenth anniversary by purchasing the former buildings, property and machinery of the Keystone Iron & Steel Co. at 2915 Santa Fe avenue, which is Los Angeles' "machinery row."

The new home of the Herberts company, which was founded in 1915 by C. A. Herberts in a 15 x 15-foot store, has a main building 100 feet wide by 410 feet long, of concrete. A 10-ton crane supplements several smaller units in handling machinery. Ample land for expansion is available.

A new office, to be part of the main building, will be 50 feet wide by 100 feet long and provide ten large show windows. The Herberts company, with which is affiliated the Herberts-Moore Co., San Francisco, represents many important makers of machine tools in southern California and Arizona.

$5000 and 10,000 no par shares by James A. Stone, 6432 Limekiln pike, to manufacture and deal in stokers, stoves, furnaces, and other appliances and devices for heating and burning.

PHILADELPHIA — Twenty-eighth division air unit, Pennsylvania National Guard, will construct an administration building on a 2-acre site on Essington avenue west of Island road. Structure will be 60 x 130 feet, and will include an engine repair shop. Appropriation for the project amounts to $75,000.

PITTSBURGH—National Valve & Mfg. Co., H. Haller president, 3101 Liberty avenue, will award contract for a 1-story shop addition, 50 x 100 feet. Plans are private.

PITTSBURGH—Pennsylvania Drilling Co., manufacturer of diamond core and process drills, A. L. Babberman treasurer, 1812 West Carson street, will build a 2-story plant, 50 x 100 feet, at 1201 Chartiers street.

New Jersey

CAMDEN—New York Shipbuilding Co., Broadway and Fairview avenues, as part of the expansion program recently noted, will add two shipways with shop facilities. Plans are being made for a new building unit. Work will get under way in the fall. (Noted June 12.)

IRVINGTON—Hilmarco has been incorporated with 75 common shares by Irving Greenfield, 1319 Chester avenue, to engage in metal spinning.

JERSEY CITY—Atlas Scrap Iron & Metal Co. Inc. has been incorporated with $25,000 and 1000 common shares by Nicholas Byron, attorney, 507 Summit avenue.

LIVINGSTON—Livingston Machine Tool & Die Co. Inc. has been incorporated with 2500 common shares by Homer D. Smith, 810 Broad street, Newark, N. J., to engage in business as mechanical engineers.

MATAWAN — Matawan airport, care of J. R. Lefferts, plans to improve its facilities and build hangars at a cost of $50,000. Plans are private.

NEWARK—Tools, Sales & Service Inc. has been incorporated with $100,000 capital by William L. Brunyate, 605 Broad street, to manufacture and deal in tools.

NEWARK — Columbia Engineering Corp. has been incorporated with 100 common shares by Joseph E. Worthington Jr., 31 Clinton street, to deal in electric motors.

NEWARK—Huntman Engineering Corp. has been incorporated with 6000 common shares by Pilgrim & Ritger, attorneys, 43 Lincoln Park avenue, to operate a business as brass founders.

NEWARK — Wing Aeronautical Corp., 60 John street, New York, plant and laboratory address 322 Hoboken avenue, Jersey City, N. J., has under construction a new manufacturing and laboratory unit here to be used for making beryllium metal. Product will be used for the manufacture of parts for airplanes and dirigibles.

PATERSON—Board of freeholders is acquiring about 100 acres for county airport in Wayne township. Hangars, repair shops, administration building and others units will be erected at a cost of about $100,000, with equipment. Wright Aeronautical Corp. and New Standard Airplane Corp., both with plants nearby, are reported to be aiding to make the locality a center of aircraft manufacture.

Ohio

AKRON—Board of education has awarded contract to A. F. Wendling Co., Massillon, O., for a boiler house, 46 x 88 feet, in connection with a new 3-story high school to be built at Talmadge avenue north. Cost of project, about $350,000.

CINCINNATI—Grimm Iron Works, 2431 Spring Grove avenue, has private plans for a 1-story plant, 80 x 172 feet, to be built on Mitchell avenue at the Baltimore & Ohio railroad. Bids have been closed.

CLEVELAND — Western Reserve university plans to build a power house addition at 2208 Cummington road. Cost is estimated at $17,000.

CLEVELAND — Upson - Walton Co., manufacturer of turnbuckles, wire rope fittings and tackle blocks, and jobber of wire and manila rope, has awarded to the Kretschmer Building Co. Inc., 3700 West 130th street, contract for an 80 x 80-foot addition to its warehouse at 12500 Elmwood avenue. Construction will be of brick and steel, requiring about 40 tons of steel.

COLUMBUS — Masser Iron & Slag Corp. has been incorporated with $35,000 and 100 no par shares by B. F. Levinson, Huntington Bank building.

DAYTON—Chrysler Corp., 341 Massachusetts avenue, Detroit, will enlarge its parts plant here.

Indiana

CONNERSVILLE — Lincoln Mfg. Co., manufacturer of automobile brakes and transmissions, whose plant recently was noted as having been damaged, will rebuild at a cost of $50,000. (Noted July 24.)

EVANSVILLE—Lindenschmidt Co., Val Lindenschmidt manager, Market and North Fourth streets, will remodel its machine shops to provide for installation of special equipment to straighten auto and motor truck axles.

EVANSVILLE—Servel Corp., manufacturer of automatic refrigerators, will institute an expansion program involving expenditure of about $500,000. Additional equipment and plant rearrangement will be the principal items. F. P. Nehrbas, vice president in charge of engineering and manufacture, has been appointed manager in complete charge of all operations.

FT. WAYNE—Magnavox Co. Ltd., which is now installing machinery in its new plant on Bueter road, will move Amrad Corp., a subsidiary now located at Medford, Mass., to the local plant and establish production here. Amrad company manufactures condensers and radio receiving sets.

GARY—City proposes to build several units, including a hangar, on a 320-acre airport at a cost of about $1,000,000. Plans are private.

Michigan

DETROIT—Portable Tool & Supply Corp., Coe terminal, 1627 West Fort street, has been incorporated with $10,000 capital by Harvey Miller Jr. to sell and manufacture building and industrial tools and machinery.

DETROIT—Public lighting commission, J. S. Foley secretary, has asked bids for a 2-story substation for the department of street railways. Smith, Hinchman & Grylls, 800 Marquette building, are engineers. Cost will approximate $150,000.

DETROIT — Board of education, C. A. Gadd business manager, 1354 Broadway avenue, has asked bids on a boiler house and heating plant addition at a 2-story school to be built on Braden street. Donaldson & Meier, First National Bank building, are architects. Cost of the project is estimated at $160,000.

ROGERS CITY—Rogers City Electric Light & Power Co., R. B. Henley secretary, will award contract soon for waterworks improvements. A pumping station with two electrically operated centrifugal pumps is included in the plans. Hoad, Decker, Shoecraft & Drury, Ann Arbor, Mich., are engineers.

Illinois

BELLEVILLE — Baker-Nagle Co., manufacturer of stoves, advises through J. S. Oldendorph that their new molding shop will be 100 x 137 feet, and will employ 30 additional molders. (Noted Aug. 14.)

CHICAGO—Car Service Co., 2241 South Wabash avenue, is reported to be planning a service, repair and garage building to cost $200,000.

CHICAGO—Rex Electric Clocks Inc. has been incorporated with 40,000 no par shares by Edward R. Tiedebohl, Room 2129, One North LaSalle street building, to deal in mechanical and electrical clocks.

CHICAGO—Anderson Tool & Die Co., Ohio and Albany streets, has started construction on a 1-story addition to its machine shop. Unit will cost approximately $20,000. C. E. Frazier, 64 West Randolph street, is architect.

CHICAGO—National Conveyor & Supply Co., 350 North Harding avenue, has been incorporated with $25,000 capital by Cavender, Milchrist

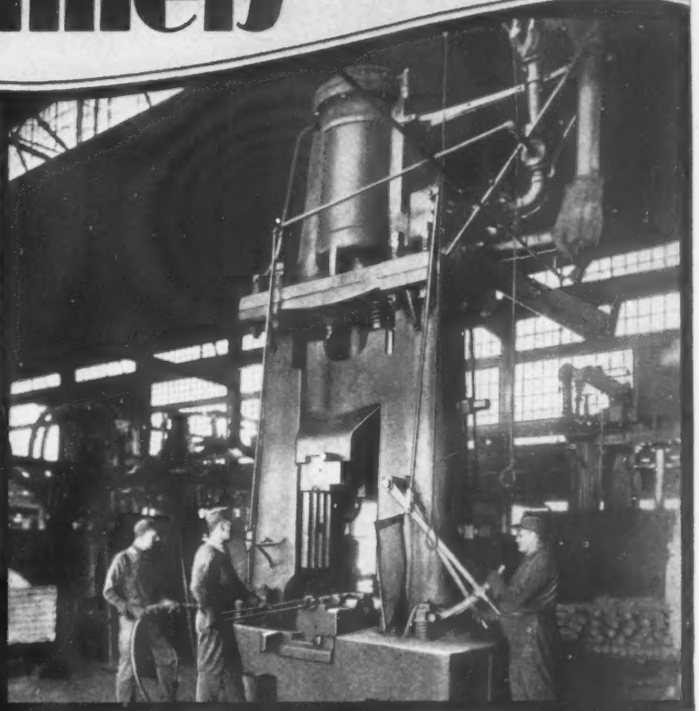
MORGAN

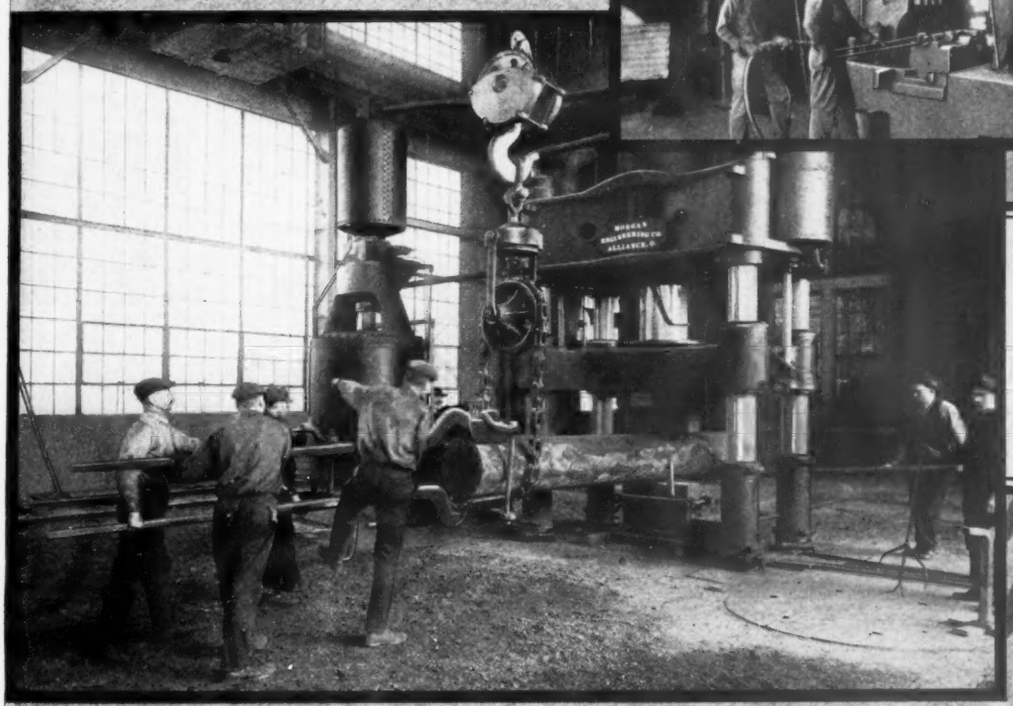
Forging Presses and Drop Hammers

12,000 Pound Drop Hammer built for The General Motors Corporation.

Forging Hammers
150 to 40,000 pounds capacity.

Drop Hammers
1,000 to 16,000 pounds capacity.





800 Ton Steam Hydraulic Forging Press

Single Frame Types
150 to 500 tons capacity.

Four Column Types
Up to 6,000 tons capacity.

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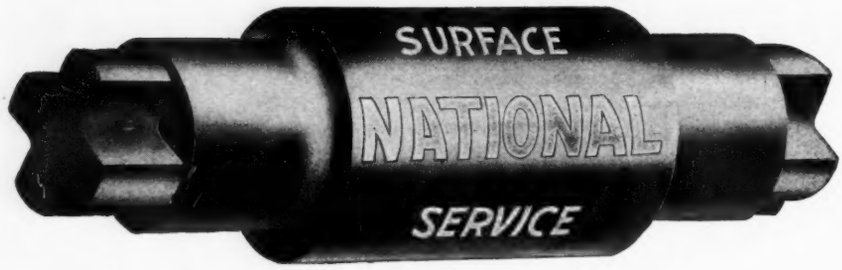
1420 OLIVER BLDG.

Designers - Manufacturers - Contractors

Steel Plant Equipment - Forge Shop Equipment - Special Machinery Of All Kinds

"NATIONAL" ROLLS



Chilled Sheet Tin and Plate Rolls
Open Hearth Steel Castings
Steel Alloy Rolls
Rolling Mill Machinery

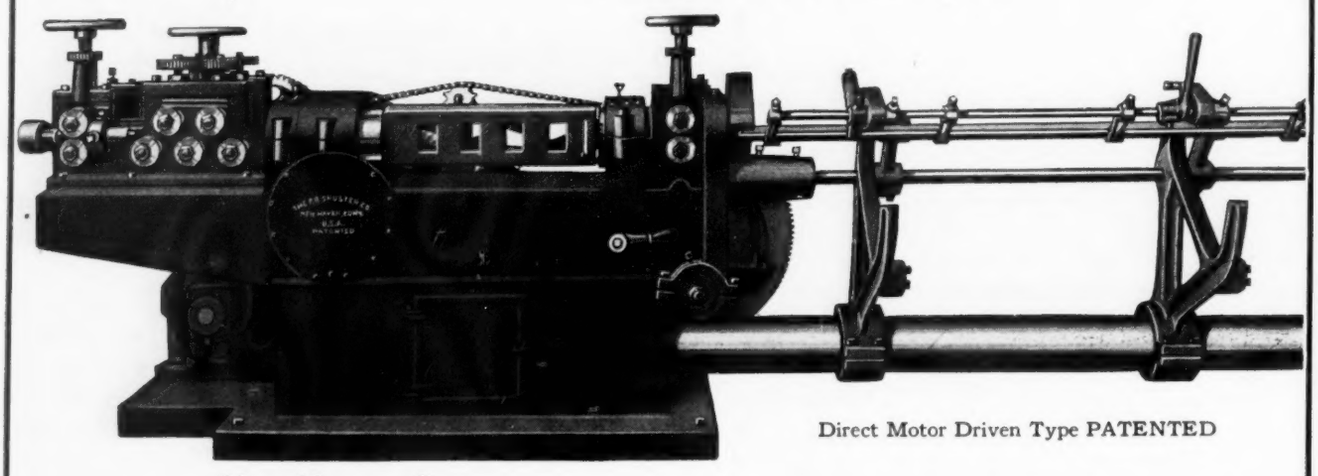
—▫—

NATIONAL ROLL & FOUNDRY CO., AVONMORE, PA.

Time a Shuster and see the *difference!*

Then you will fully appreciate what 63 years of specialization has meant in the development of Shuster Wire Cutting and Straightening Machines.

Shuster Machines assure unusual speed, absolute accuracy, and low maintenance.



Direct Motor Driven Type PATENTED

New Haven, Conn.

Straightener Specialists Since 1866

They pay for themselves in a few short weeks

& Kaiser, Burnham building, to deal in iron and other materials.

CHICAGO—Chicago, Milwaukee, St. Paul & Pacific railroad, Canal and Jackson streets, has a building permit for a roundhouse addition at 731 North Sacramento avenue. Cost is estimated at $26,500.

CHICAGO—Chicago Surface Lines, 231 South LaSalle street, has a building permit for an addition and alterations to car barns at 2301 Division avenue west. Hugo Schmidt, 1155 North Clark street, is architect. Cost is estimated at $100,000.

CHICAGO—American Agricultural Implement Co., 20 North Wacker drive, has been incorporated with $300,000 and 16,000 no par common shares by Charles S. Babcock, 100 West Monroe street, to engage in a general manufacturing business.

DUPO—City will receive bids about Oct. 1 for two vertical centrifugal pumps direct connected to 20-horsepower, 220-volt, 3-phase, 60-cycle, double-speed vertical squirrel cage motors, and other equipment. Total estimated cost about $100,000.

ELGIN—Midwestern Aircraft Co., whose hangar recently was noted as having been damaged by fire, will rebuild the hangar unit and add shops and repair buildings. (Noted Aug. 7.)

GALESBURG—Chicago, Burlington & Quincy railroad, A. W. Newton chief engineer, 547 Jackson boulevard, Chicago, will erect a 2-story warehouse, 60 x 220 feet. Contract has been awarded to J. E. Nelson & Sons, 3240 South Michigan boulevard, Chicago. Approximate cost, $75,000.

SPRINGFIELD — Shanklin Metal Products Co., 119 North Eleventh street, has been incorporated with $15,000 capital by Doyle, Sampson & Griffin, First National Bank building, to manufacture and sell acetylene lamps and other metal products.

Southern States

BIRMINGHAM, ALA.—Lamson & Sessions Bolt Co., 1971 West Eighty-fifth street, Cleveland, local address Thirty-first street and Twenty-seventh avenue, will build a 1-story 60 x 180-foot warehouse, contract being held by Johnson Construction Co., 512 North Sixth street, Birmingham. George S. Ryder, Marshall building, Cleveland, is architect.

MOBILE, ALA.—City will enlarge airport and add improvements on 25 acres adjoining present airport. Council is considering proposal to call for a bond issue of $50,000.

WILMINGTON, DEL. — United States Dirigible Corp. has been incorporated with $800,000 capital by Corporation Service Co., Delaware Trust building, to deal in flying machines.

WASHINGTON—Fred S. Gichner Iron Works advises through J. S. Gichner that the new plant unit about to be built will be 108 x 208 feet. Items of equipment which will be required include a large steel bender brake, drill presses, grinders and spot welders. (Noted Aug. 14.)

JACKSONVILLE, FLA.—Continental Can Co., 1 Pershing square, New York, has a building permit for alterations to its plant at Spires and Fifteenth streets. O. P. Woodcock Co., Duval building, is the general contractor.

LAKE WORTH, FLA.—Chamber of commerce plans to locate a port for land planes and seaplanes. Investigation of sites is under way.

SOUTH JACKSONVILLE, FLA.—W. B. Lamb proposes to build a hangar unit, 30 x 40 feet, at McMullen Aviation school field.

CEDAR GROVE, LA. — Beaird Corp., J. B. Beaird general manager, is erecting a machine shop addition at a cost of $12,000.

NEW ORLEANS — New Orleans Public Service Co., J. R. McGivney purchasing agent, 317 Baronne street, is receiving bids for the construction of a unit, 33 x 150 feet, for machine shop purposes.

BALTIMORE—Machine shop and storage shed at the shipbuilding plant of Arundel Corp., Pier No. 2, Pratt street, recently were damaged by fire.

YAZOO CITY, MISS.—Chamber of commerce has tentatively selected a site comprising 125 acres for an airport development here.

CHATTANOOGA, TENN. — Mountain Power Co. plans a hydro-electric development costing over $1,000,000 on the Tellicoe river.

Missouri

INDEPENDENCE — City is having preliminary plans prepared for improvements to its power plant. Boilers, stokers, a turbine, and other equipment will be needed. Estimated cost, with equipment, $115,000. Black & Veatch, 700 Mutual building, Kansas City, Mo., are engineers.

JOPLIN—Eagle-Picher Lead Co., 134 North La Salle street, Chicago, local address Smelter Hill, will build a 2-story plant here for the manufacture of metal wool. Plans are being completed for a unit costing $30,000.

KANSAS CITY—Refrigerator Corp. has been incorporated by E. N. Wood Jr., 618 Schaefer avenue, to deal in refrigerating machinery.

ST. LOUIS—Central Fan Mfg. Co. has been incorporated with $10,000 capital by F. A. S. Wood, 6515 Clayton avenue.

Oklahoma

ALTUS—City has awarded contract to H. C. Flowers for construction of a light and power plant, recently noted as destroyed by fire. Structure will be 50 x 70 feet and will house 1000-horsepower diesel engine equipment. (Noted April 24.)

OKLAHOMA CITY—J. A. Werme Steel & Iron Co., 510 North Indiana avenue, is building an addition to its structural fabricating plant, 100 x 300 feet.

Arkansas

FAYETTEVILLE — City aviation committee has acquired about 150 acres south of here on highway No. 71.

Texas

AMARILLO — American Pipe & Junk Corp. has been incorporated with $10,000 capital by T. Specter, 2004 Fillmore street, to deal in pipe and junk.

ANNA — City council will install pumping machinery and auxiliary equipment in the municipal waterworks. Bond issue for $35,000 has been authorized.

BEAUMONT—Port commission is receiving bids for the construction of steel warehouse buildings, 80 x 200 feet and 80 x 285 feet. A. L. Tetley, 204 City Hall building, is engineer.

BEAUMONT—City will develop a 276-acre airport, constructing several buildings, to include a hangar unit. Preliminary plans are being drawn by Frank Bertschler, park superintendent. A total of $70,000 will be spent.

FT. WORTH—Leonard Brothers, 111 North Houston street, have awarded contract for a garage building, to include repair shop facilities.

FT. WORTH—Wisconsin National Fibre Can Co. plans to erect a plant here for the manufacture of fibre containers, by means of machinery now being prepared by the company at Cudahy, Wis. A separate organization will be incorporated in Texas with a capitalization of $250,000.

SAN ANTONIO—International Machinery Co. has been incorporated with $25,000 capital by John Tancred Jr., 117 East Norwood avenue, to manufacture irrigation machinery and supplies.

SAN ANTONIO—As a part of construction projects recently noted, Air Corps, Randolph field, has awarded contract to K. L. Colburn Inc., Pasadena, Calif., for eighteen hangar units, at a total cost exceeding $500,000. (Noted June 19.)

WICHITA FALLS—Equipment Mfg. Corp. has been incorporated with 50,000 no par shares by A. E. Taber, 904 North Third street, to manufacture steel storage tanks, drums and other products.

Wisconsin

OCONTO—County board of supervisors has authorized the purchase of the former Montana Tractor Co. plant here for $25,000 and will spend about $15,000 for equipment and remodeling. An addition will be built later at

a cost of about $25,000. Plant will be used as a machine and service shop and warehouse for county highway equipment.

PORT WASHINGTON—Port Washington Advancement association, Roy Schuknecht secretary, is in communication with a Chicago manufacturer of electrical supplies, who will attempt to secure a plant with 15,000 square feet of floor space.

Montana

BILLINGS—Lloyd S. Parham, formerly of Ryniker-Winter Sheet Metal Works, has purchased the Murphy Welding Works, 2214 First avenue north. New equipment to be installed will include a portable arc welding machine.

LIVINGSTON—Northern Pacific railway, 43 Nassau street, New York, is adding a machine shop unit here for servicing locomotives.

MALTA—Machine shop of H. P. Jacobson and East Side garage recently were damaged by fire. Loss, $10,000.

Idaho

WALLACE—Mutual Mines Development Co., care of R. F. Collins director, Coeur d'Alene, Idaho, plans to build a flotation mill here with a capacity of 100 tons. A 100-ton crusher also is planned.

WARDNER—John, George and Frank Bingham propose to construct a 150-ton concentration plant here. Engineer is to be selected.

Kansas

LEAVENWORTH — St. Mary's academy will build a 1-story boiler house. Maurice Carroll, 713 Linwood boulevard, architect, is receiving bids.

Arizona

FT. HUACHUCA—Arizona Imperial Mines Co. proposes to build a flotation plant with a capacity of 200 tons, and a 1500-horsepower house. A new compressor and hoist may also be added. M. R. V. Baumkirchner is president.

Pacific Coast

LOS ANGELES—Hughes Development Co., 1001 North Orange drive, will build a 2-story laboratory, 150 x 297 feet, at a cost of about $200,000. Contract has been awarded to Myers Brothers, 3407 San Fernando road.

LOS ANGELES—Craft Films Inc. has awarded contract to H. A. Murphy, 6347 Eleanor avenue, for a 2-story, 140 x 150-foot laboratory unit on Santa Monica boulevard. Cost, including equipment, is estimated at $750,000.

LOS ANGELES—U. S. Electrical Mfg. Co., 340 East Fourth street, recently noted as expanding facilities, advises that a 1-story addition, 140 x 150 feet, designed to carry a 5-ton double girder crane, is being completed. Additional wing is 34 x 40 feet. Floor area of plant has been increased to 100,000 square feet. Hanna, Grant & Bruner Inc., 307 South Hill street, is erecting the addition. (Noted July 10.)

SAN FRANCISCO—Cyclops Iron Works, manufacturer of machinery, 837 Folsom street, is erecting a 1-story plant and storage building at Shipley street between Fourth and Fifth streets. H. C. Vensano, 58 Sutter street, is engineer.

SEATTLE—Great Northern Power Co. has plans for a hydro-electric power plant on Skykomish and Sultan rivers, with transmission system. Total cost, $2,000,000.

SEATTLE—Beebe Bros. Hand Hoist Co., R. H. Beebe manager, 3223 First avenue south, has purchased the former Simonds Saw & Steel Co. plant at Sixth avenue south and Lander street. A new type of jig saw will be manufactured.

SEATTLE—Rottler Boring Bar Co. Inc. has purchased a plant for future expansion at West Spokane street and Eleventh avenue southwest. Operations are to be moved to the new location, increasing machine shop capacity three times. Company manufactures boring bars, piston grinders, and reamers. C. T. Rottler is president.

TACOMA, WASH.—American Mfg. Co. has been incorporated with $10,000 capital by S. F. McAnally, attorney, to manufacture and deal in machinery.

New Trade Publications

OIL-ELECTRIC LOCOMOTIVE—George D. Whitcomb Co., Rochelle, Ill., illustrates in a current bulletin one of its oil-electric locomotives, with complete specifications.

ELEVATOR ENGINES — Warner Elevator Mfg. Co., Cincinnati, has issued a bulletin on its engines for elevator operation. An illustration shows the engine and full description is presented.

ELECTRIC FURNACES—The Electric Furnace Co., Salem, O., has issued a bulletin, illustrated, describing new gas and electric chain belt conveyor furnaces for heat treating miscellaneous small and medium sized parts and products without pans or trays.

LUBRICATION—Borne Scrymser Co., New York, presents claims for its lubricating devices in two current bulletins which go into considerable detail on the applications of its universal compressor and lubricators as applied to industrial equipment.

PIPE THREADER—Jarecki Mfg. Co., Erie, Pa., has issued a bulletin on its high-speed pipe threader, with full description of construction and illustrations of the entire machine and details of construction.

PORTABLE POWER UNIT—Westinghouse Electric & Mfg. Co., has issued from its works at East Springfield, Mass., a bulletin on a portable power unit designed for use on construction and repair jobs where power is needed.

ELECTRIC MOTORS — General Electric Co., Schenectady, N. Y., has issued a bulletin on one type of its direct-current motors for moderate or heavy duty. It follows the usual style of the company's descriptive bulletins, with illustrations of details and full description.

REFRACTORIES—A booklet on its ramming mixtures for monolithic furnace construction and repair has been issued by the Charles Taylor Sons Co., Cincinnati. It is applicable especially in oil and gas-fired furnaces used in melting brass, aluminum and special alloy steels.

TRAMRAIL—Under the text "Do not build more ovens"—Cleveland Electric Tramrail division of the Cleveland Crane & Engineering Co., Wickliffe, O., suggests increasing capacity of present equipment by use of tramrail rack carriers. Illustrations show installations which have given this result.

CENTRIFUGAL PUMPS — Chicago Pump Co., Chicago, offers a digest of its line of centrifugal pumps in a current bulletin, showing several pumps and various applications. It is intended to give an airplane view of the line. Another bulletin covers its vacuum pump and points out important points of design which gives it efficiency.

WELDING—American Rolling Mill Co., Middletown, O., is distributing a booklet on welding results obtained by the use of its ingot iron. Tests of welds made in this material are illustrated. Several pages are devoted to illustrations of industrial uses to which the metal has been applied in welded form. Various data are also included and much informative matter is offered.

OIL AND GAS BURNERS—Johnston Mfg. Co., Minneapolis, in a current bulletin describes practical applications of its reverse blast burners for oil or gas in connection with its new silent-type direct-connected pressure blowers. Illustrations show installations. A table of specifications is appended. Another bulletin covers blacksmith forges equipped with the company's low-pressure burners for oil or gas.